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GEOGRAPHY
READING BOOKS

TANDARD

2

VISED EDITION

[MEXICAN WATERFALL.]

PART II. FOR STANDARD II.

GEOGRAPHY READING BOOKS

Adapted to the Requirements of the New Code

LONDON
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PREFACE TO PART II.

THE earlier portion of this book is very nearly a reproduction of Part I. of the original series. The only important changes are the omission of Chapters XXI. and XXII.—the Cardinal Points being now transferred to Standard I.—and considerable retrenchment of the chapters on Continents and Oceans. In this way, room has been found for lessons on 'The size and shape of the World,' borrowed from the old Part II., and for a few 'illustrations' from the map of England.

The method here adopted is now pretty well known. I have aimed, *first*, at producing a *readable* reading-book; and, *secondly*, at putting the explanation of geographical terms in such a form that children *must* understand them, before they can attempt to remember them. The effect of every lesson will depend quite as much on the teacher as on the author.

Some of the sections are very short. In all these cases it will be found *either* that it is desirable to refer to some previous section, *or* that more than usual time and care are needed to explain or illustrate the statements of the text. Section xiv. is an example of the first kind; sections xxv. and xxxv. of the second.

The introductory sections (i. to vii.) are meant to excite the children's interest in the subject, and to give ideas of the *things* to be learnt, before they hear of the *names*. I should advise teachers *not* to supply the names at this stage, but to set clearly before the children the things themselves, try whether they happen to know what any of them are called, and raise their curiosity as to the rest. These sections will also serve, when the book is finished, as revisal lessons; and for the final revisal of all, the Index of Terms will supply a convenient text.

No teacher, I hope, will find fault with the little by-play of dialogue, or with the visit of the Man in the Moon. They are intended to relieve the strain on the attention, to make the book a true Reading Book, and to show how the facts of geography have a real bearing on practical matters. If Johnny and Charlie make friends in our schools, I think it will be found that Hills and Lakes and Rivers have not lost but gained by their presence.

THE AUTHOR.

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GEOGRAPHY READING BOOKS.

PART II.

SECTION I.

I. THE EARTH AND ITS NEIGHBOURS.

1. HAVE you ever heard of the Man in the Moon? I don't know that there *is* a Man in the Moon: if there were one, I suppose there would be more; but most people now think that there is no one in the Moon. However, we can *suppose* there is one, if we like; and when once we begin to suppose, we may go on supposing whatever we please!

2. So I *suppose* that the Man in the Moon, who is always looking this way, towards the world we live in, began to think about it, and to wish that he could pay us a visit. It was so much nearer to him than any other star, that it seemed to him to shine the most brightly of any. And yet he knew so little about it!

3. So, having no one else to talk to, he began to talk to himself. 'What a pity it is that I can't manage to fly over, and see what it is really like!

It seems such a big place, and there must be a number of funny things there that I should like to see. I dare say I should not like to stay there long; but I *should* like to have a trip there, if it was only for a little change.'

4. Just then he looked up, and saw something curious in the air; and, before he had time to cry out, the curious thing went past him with a flash almost blinding him; and, when he opened his eyes, there stood beside him a bright being, laughing at him for being afraid. 'Hallo!' at last said the Man in the Moon, 'who are you? and where do you come from?'

5. 'Never mind my name,' said the stranger; 'that's nothing to you. I've come from a good way off, from my own home, in a place called *Jupiter.* You may just see it perhaps, if you have good eyes. I found it dull and stupid staying at home.'

'So it is,' said the Man in the Moon.

6. 'So I took a few short trips, and then I set out on a longer journey. I wanted to get to the end of all things; but I don't seem likely to do it in a hurry. There is such a number of worlds to be seen. However, here I am. A very funny little world you seem to have. I can hardly find room to stand on it. But it wasn't you I came to see. *I wanted to ask you if* you could tell me anything

about that neat little ball out there, that you seem so fond of. I could hardly see it when I started; but from here it gives a very nice little light.'

7. 'Neat little ball, indeed!' cried the man in the Moon; 'nice little light! Why, that is the Earth, my mistress. She takes me with her wherever she goes; and sometimes I really think that I am of some use to her; for she seems now and then to have no light except what she gets from me. But I know very little about her. I can't get to her; I wish I could!' And the Man in the Moon sighed a deep, heavy sigh.

8. 'Oh!' said the stranger, 'we know all about that kind of thing. Your little speck of a world is what we call a Moon, and you are the man in it. And you go twirling round and round, keeping the same face always towards this darling Earth of yours. We know all about it; we have some of our own. Only, I must tell you, we should not be content with one little thing like this! We have *four*, and we don't find them more than enough. However, as you can't tell me anything, I will go on my way, and find out for myself. I'm off.'

9. 'Stop! stop!' cried the Man in the Moon, 'I should like to go too! Can't you take me with you?'

'Well, my good friend,' said the stranger, 'I *don't think you* will like it much; and it will be rather hard work dragging you along. However, come away; it will be something new, and we can but try.' So off they went.

II. THE VISIT TO THE EARTH.

1. *How* the Man in the Moon and the stranger went on their journey I can't tell you, for I never saw them, or any like them. We are only *supposing*, you know. If there are really any people in the far-off star we call Jupiter, they must be very unlike us, and they certainly never came to visit us or the Man in the Moon. But let us see what they would find if they did come. At first it was hard work—they seemed to be going up all the time. Then, as they got nearer, they felt drawn towards the Earth, as if they were tumbling *down* to it; the air grew thicker and heavier, till at last they alighted on what seemed, on first touching it, to be solid ground, but turned out to be hard frozen snow. It was quite dark when they reached it, and hours went on, and still there was no light.

2. 'This won't do for me,' said the stranger; 'I am not used to such long darkness: we manage better at home. We get over our nights in less than half the time, and our four bright moons make our *night almost* as light as the day. Good-bye, my

friend; you must find your way back again by yourself.'

3. The Man *of* the Moon (we can't call him the Man *in* the Moon just now!), thus left alone, was not sure whether to be glad or sorry that he had made out what he had been wishing for so long, a visit to the Earth. He knew now from his new friend that the Earth was not quite so grand a place as he had thought it, and that there were many others, which he had fancied mere twinkling stars, which were really much larger. Still, he would make the best of it; and as day dawned at last, he began to look about him, to see what this strange Earth was like.

4. What he saw, and how he got on, we will speak of in the next lesson. For the finish of this one, just think what you have really learnt. The Man in the Moon and the stranger from Jupiter you may forget, if you like. But you have learnt that the Earth is a round ball, which shines at a distance like the stars we see in the sky; that the Moon is another smaller ball, which moves round it and with it; and that Jupiter and all the other stars are worlds, many of them much larger than our own. We are now going to leave them alone for a good while, and see what we can find out about the Earth itself.

III. THE FACE OF THE EARTH.

1. We must go back for a little while to our friend, the Man from the Moon; because a little more *supposing* about his visit will help me to put in order the many things which are to be seen on the land and water which cover the face of the Earth. These lessons are meant to teach you the meaning of the names given to these things; and, while you are learning the names, you will be learning a good deal about the things themselves, and so be getting ready for your harder lessons next year or the year after, on the country you live in, and the places in it.

2. We left our friend, you remember, on some hard-frozen snow, wondering what sort of place he had got to. It was daylight now, but he could not see much of the Sun; for all round him the air was quite thick and damp. When it cleared a little, he looked about him, but could see nothing but the same white cloak or covering spread over everything; he was standing on the highest point, but there were many other points not much lower, some sharp and jagged, some round, some with smooth face, but all white and now sparkling in the Sun. We have called this white covering by its name—*snow;* but I suppose that he did not *know* what it was.

3. He now began to move, and of course he had to go downwards. If he had been one of

MOUNTAINS AND SNOW.

us, he would have had to be very careful, for it was very slippery; under the soft snow was something hard and smooth, and the way he had to go was very steep. But, after coming all the way from the Moon, you may suppose he was not afraid of slipping. So he got along pretty well.

4. By-and-by he began to feel that this smooth stuff under his feet was moving downwards—*very, very slowly;* none of us could have felt it, but he could feel (we may *suppose*) much more keenly and quickly than we do. So he set it down among the things he had to ask about—why does it move?

5. Then he looked up: on both sides the white veil hung over him; and all of a sudden, a great mass of it came down with a loud noise—*we* should say, with a sound like thunder, but I am not sure that there is any thunder in the Moon, —and went rolling down before him, breaking into pieces as it went, and carrying with it everything it met. Still he went on; and soon he began to see brown and grey patches peeping through the white, and hanging as if they too would fall.

6. Lower and lower still he came, and everything looked so fresh that he was quite pleased, and said to himself, 'Well, really this is very nice; and, *now* I look back, those brown and grey points,

with the white tops high above them, are very fine and grand. The Earth is a very beautiful world after all!'

IV. THE FACE OF THE EARTH.

(*Continued.*)

1. BY-AND-BY, instead of grey and brown, our friend saw green patches coming down to the track he was going by, and then trees and shrubs, growing larger and fresher as he went on. Then came a bit of level ground, though still high up. As he looked *behind him*, he saw that there was a break

[THE ROADWAY.]

in the line of high ground, and a narrow roadway winding through the middle.

2. Before him, all of a sudden, he found the level track came to an end, and the ground became as steep as at the top, but not slippery. All was green round him, growing greener and fresher as he went down the zigzag path, till at the bottom he found himself in a deep hollow, shut in on all sides by the heights.

3. Halfway down the zigzag, he had had another surprise. He heard a bubbling sound a little way off the path; and, turning aside to see what it came from, he found a tiny hole in the ground, and out of this hole water was gushing up and trickling down towards the hollow.

4. Now, as he went along, he found a little silver thread of water running beside him, and, looking up, he saw that it began at the very point where he had stopped before. The water trickling from the side of the slope had come down into the hollow, and was now running at his side.

5. A little farther on, the hollow opened out into a wide level space, wider than the bit of flat ground above, and oh! so much greener. Our friend looked before him, and behind him, and above him, and on every side, and took a long look at it all; and then said to himself, with a sigh, '*I have nothing like* this in the Moon!'

6. I am not sure how he made out the next bit of his journey. No doubt, he had ways of getting

[MOUNTAIN TORRENT.]

on *which I know* nothing of. But the next time he opened his eyes—at least, the next I can tell you of—he had before him another wide open space, but this time not of land, but of water; its colour was the brightest blue, and all round it were heights, one behind another, like those he had first travelled over, some green, some white, but green and white alike all sparkling in the light of the Sun.

7. He went on along the edge of this great sheet of water; and at one end of it he found what seemed to him the strangest thing he had yet seen. He had got used to the new shapes of the land and water; but here were forms quite unlike those he had passed through, and he did not think they were nearly so pretty. What were they? They stood up, a number of them together, stiff and square, with openings in the front of each, filled up with something that seemed to keep out the air, but let in the light. What do you think they were? He could not tell. He met a number of men and women; but he could not speak to them, nor they to him! They stared at him, and he got out of their way as soon as he could.

V. THE FACE OF THE EARTH.

(*Continued.*)

1. THE Man from the Moon was quite glad to go back to the water, which seemed like an old friend. And, at the end of the wide open piece, he found a great body of water rushing out. 'Aha!' said he, 'this is like my little friend that ran side by side with me down the hollow. But this is far larger and stronger, like my little friend grown from a baby to a giant.' A little way on, all of a sudden, he lost sight of it! It ran in between some great rocks, and then down it went, plunging and roaring, and all he could see was a great cloud rising up where the water ought to have been. 'Oh dear!' said he, 'what has become of my friend?' However, he pushed his way on a little farther, down some rough steep places; and there, far below him, was the stream running on as quietly as ever!

2. It led him to a point where it met another body of water, not much less than itself. They seemed at first not quite sure whether they could agree; but soon their waters joined, and they ran on together.

3. As he went with them, he looked up, and saw a little way beyond some more rising ground.

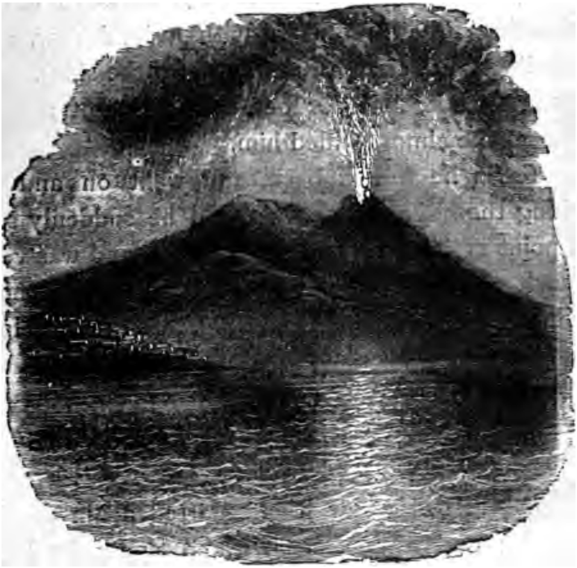
'Not like my first friends with the white night-caps,' said he to himself—you see he was so pleased that he was quite merry now! 'Not nearly so tall or so big; but they are like them in a smaller way—they might be their children!'

[THE MEETING OF THE WATERS.]

4. But a new sight was before him, which fairly took away his breath. First, the running water grew wider; then it split into two or three branches, with land between them. Then, when he got as far as he could go, there was a sheet of water, blue and bright like that he had seen

before, but spreading out very much farther! Far as ever his eyes could see, there was nothing but water, water, water on every side!

5. He could travel, you know, through the air! So we may just as well *suppose* that he could travel over the water. At first, he kept close to the land, along the edge, and was amused to see the *ins* and *outs* of it; the little bits of land jutting out, and the little bits of water running in. Soon, *he left the land*; but, after going on for a little



[A VOLCANO.]

while, he was surprised to come to land again! and then, a little way off, he saw another strange sight. 'What can that be?' he said to himself; 'Another of night-caps' children! But it is all on fire.' For, out of the top of a high peak, rose some thick smoke, and then a dark-red flame, shooting up into the air with a loud roar, and sending a hot stream running down the sides. 'I'll go and see it,' said he; but, before he got near it, the smoke almost stifled him.

6. So he turned back, and went on and on along the edge of the water, till he suddenly saw a point of land he had seen before, and was very much surprised to find that he had gone round, while he thought he was going forward, and had come back to the place he started from!

VI. THE FACE OF THE EARTH.

(*Continued.*)

1. NEXT day our friend started again on his travels; and when he saw land again, he kept at a distance from it. 'Oh! but this is worth looking at,' he said; 'this is like one of my old friends that looked down upon me just after I left night-caps behind! But this fellow stands alone, and lifts his head high over the water. He is rough and rugged; but he is very grand!'

While gazing at him, he had not thought where he was going. Now, looking round, he was surprised to see how close the land was to him on the

[A ROCKY SHORE.]

other side. He was going through a narrow passage *of water*; and already he felt that, when he got to the end of it, he would see some more of the new things in this strange world.

2. He got through the passage; and there, sure enough, was water such as he had not yet seen —tossing about, sometimes over his head; green, blue, and white by turns, and rolling on with such force that he found it easiest to go the way it carried him. As he went near the land, the water rolled in after him, as if it was going to cover it all up; but, after a while, back it went, bit by bit, leaving great spaces bare.

3. He thought this very strange; and so would you, if you had always lived in the middle of a country, and had heard nothing about what was to be seen by the water's edge. Still he went on, keeping close to the land. Often he had to go round long pointed bits, 'just like my nose!' said the Man of the Moon to himself.

4. At last he grew tired of going in and out so often. So, when he came to a very wide opening, he looked up it, and then across it, and said, 'I'll make a short cut, my friend. Your mouth is too wide and too deep for me. I'll go straight on. This shortened his journey, and brought him very soon to the end of this rough bit of water. He found himself in a long passage, longer than the first and not so narrow; he could see land on the other side, but he kept close to his own side, and

took one or two little trips round some small pieces of land, just to see (as he said to himself) whether there was really water on all sides of them.

5. Once he was disappointed; for, after going very nearly round, he was stopped by a little strip of land. Of course he could go over it, if he liked. But he turned away, rather vexed with this stupid little scrap, as he called it, and saying, 'Oh, dear! what a strange world is this! When you expect to find land, you find water; and when you expect to find water, you find land!'

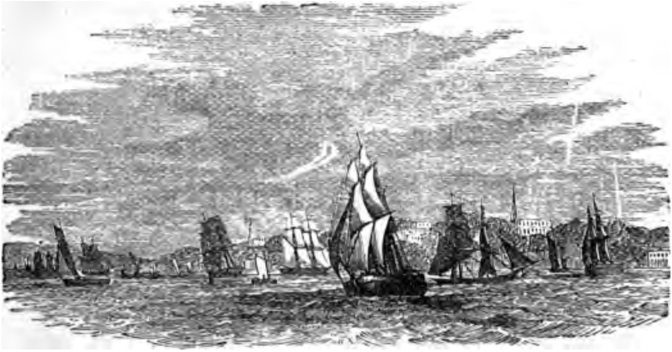
VII. THE FACE OF THE EARTH.

(*Continued.*)

1. THE journey now took our friend through one more turn, and another passage, with some tall white rocks above it. He gazed there for some time; they looked bright and sparkling in the sunshine; still, he said at last, 'No! I like my old friend the best. He had a nobler, prouder look than these. But oh, dear, what is that noise? And what is the meaning of that white cloud that is thrown up into the air every moment?' He went over to see what it was; but he could see *nothing, except* that the water seemed very angry

and was dashing with all its might on a bank of sand that stretched out for some miles, a little way off the land.

2. He did not like the look of it, and some ships on the other side seemed to like it even less than he did. He saw one of them driven up to the sand and stick fast there, while the men in it shouted and cried out; and at last there was a flash, and a loud sound, which startled him as much as when the great white ball fell at his feet as he came down on his first journey. 'Hallo!' said he; 'it is time to be off. I can't help you, and I don't want to stick in the sands, or to be blown to pieces by this *roarer* of yours.'



[THE RIVER THAMES AT GRAVESEND.]

3. *The roarer*, as you may guess, was a cannon,

which they had fired off to ask the people to come and help them. However, off he went, through some still calm water, round one or two points, and then once more into what he thought was another passage. But, no! instead of passing through, he found it getting narrower and narrower, crowded with ships and boats, and noisy men; till at last, after getting away from them, he was met by a body of water rushing down. 'Just like my old friend with the many mouths!' he cried, 'who tumbled over the rocks, and then ran with me all the way from the bright blue sheet of water. But this fellow has only one mouth, and he opens it wide enough! I'll go back a little way, and find somewhere to rest.'

4. So, back he went, and left the water, passing many strange things, till he found himself in the midst of a noisy crowd—more men and women than he thought there could be in the whole of the Earth. He was almost frightened; for, you know, he had always lived alone. He soon found his way into a quiet open place, and there somehow he was able to speak in English to a stranger, who looked kindly at him. His first words were, 'Where am I?'

5. The stranger answered, 'Why! you're in LONDON, and this is Hyde Park!' 'And who in the *world are you?* You look rather queer!'

'I may well look queer,' said our friend; 'for I am the Man in the Moon!'

'Well, to be sure,' said the Londoner; 'how ever did you get here?'

VIII. THE BROOK.

1. NOW, don't you think this is rather a funny book? I should not wonder if some very wise boys thought it great nonsense, to begin talking about the Man in the Moon and his visit to the Earth. Very likely it is! But you see, boys, we cannot all be as wise as you are; and sometimes we talk nonsense, as the best way of teaching sense.

2. Have you been thinking what is the meaning of all those things that the Man in the Moon came to? I dare say they puzzled you. Well, this is what they mean. Each of these tells us of some one thing on the face of the Earth.

3. We shall not take them in their order, because it will be better for you to begin with something that you may have seen; and I am sure that you have not seen what came first to him in dropping down from the Moon!

4. First, let us take 'the little silver thread of water running alongside of him.' This at least you must all of you know; at least all of you who

live in the country, and even town-children who have been taken into the country for a treat.

5. You all know what **a Brook** is. In your rambles I dare say you often walk along by the side of the brook and listen to its pleasant music. No doubt you have noticed that it is not always the same. Sometimes it is very full of water, and rushes madly onwards, roaring loudly as it goes. At other times it flows peacefully enough, only making a gentle murmur as it ripples along. Or you may have seen it when it has been almost dry, and its song faint and low. At all times a stroll beside it is pleasant.

6. Let us go, then, for an afternoon's walk along the banks of some one of the brooks you know best. We will hasten and get to the water-side as soon as we can. Our ears tell us when we are near to it, and we soon see it merrily dancing and singing along. The sun is shining brightly in an almost cloudless sky, the fields look green and beautiful after yesterday's rain, and everything seems to promise that we shall have a delightful ramble.

7. Having reached the water-side, which way shall we go? Are we to walk the same way as the water is flowing, or shall we walk upwards and try to find out where the water comes from? Our queer-looking friend, you know, came down his brook; but I *think* to-day we cannot do better

than try to reach the birth-place of ours, and so we will walk upwards. Let us start then, and be careful to use our eyes well as we go on.

8. Resting for a few minutes, and looking back on the way we have come, it is plain that we are on higher ground than we were at starting. We have been, little by little, slowly climbing the side of a hill, just as our friend came *down* the hill *from* the birth-place or source.

IX. THE SPRING.

1. LET us go on again. Look how the brook winds in and out, never flowing long without making a bend of some kind or other. It is so narrow now that we can jump from side to side quite easily, and it cannot be long before we find the spot it came from. Here we are at it! See how the water seems to rise out of the hill side, not gushing forth in streams, but slowly bubbling up out of the ground, gathering together in a little hollow like a basin, and then flowing downwards. Or, it may be, that the water drips from the side of a steep bank into the basin below, and then goes on its way. This, then, is where some, at least, of the water in our brook comes from; this is the beginning of the brook, or, as it is called, its **Source.**

2. The water trickling out of the hill-side which

forms our baby brook, or *rill*, is called 'a **Spring**.' This spring, we suppose (like our friend's), is open on the hill-side; but there are many springs of water lying hidden in the ground. When you are older you will learn how these springs are formed.

3. Have you ever seen a well? and do you know what it was made for? It has been dug to get at the spring of water lying, perhaps, fifty or sixty feet below the ground. The rain sinks down till it comes to a bed of earth, or rock, that will let it sink no further, and there it stops and forms a sort of small underground pond.

4. Now attend to one lesson, which is worth learning. The well, you see, goes down to the spring, and all the water which you pump up or draw up in a bucket comes out of the spring. So, unless the spring is kept nice and clean, the water from the pump will not be fit to drink.

5. But, if heaps of manure are made near the top of the well, the rain will soak through the dung and reach the spring and spoil its water. Many fevers have been caused in this way. The worst thing of all is to have a cess-pool near the well. You will think I am forgetting the brook. Well, I did forget it for a little while; but I think it is good for you to know how very important it is that our drinking water should be kept as pure as possible, and how easy it is to spoil it.

X. THE BROOK.

(*Continued.*)

1. HAVING found the birth-place of our brook, we will now walk back, still keeping close to the stream, and watching it carefully to see what more we may learn from it. Throw a piece of stick into the water: look! it is borne away from us so quickly that we can scarcely walk fast enough to keep up with it. This shows us that the water is flowing very rapidly down the hill side.

2. Some day you may know *why* it runs downwards; and why an apple shaken off a tree falls to the ground and does not fly up in the air. But you can easily see that it is so. If you let a drop of water fall on your slate, as long as the slate is held quite level the drop remains where it fell; but if you slant the slate, it begins to run slowly downwards; if you slant it a good deal, the water runs much faster. So, the steeper the hill side, the quicker the water in the brook will flow.

3. Now, let two drops of water fall on the slate, one of which is much bigger than the other; slant the slate, as before, and you will find that the bigger drop will run much faster than the smaller one. This teaches us why the brook flows so much quicker at one time than at another. After

[A BROOK ON A HILL-SIDE.]

heavy rain, being full of water, it rushes down with great force and a mighty roar, as if it would carry *away everything in* its path. Our brook, so different in this case from what it is to-day, might then be called a **Torrent.**

4. As it runs along quietly just now, you see it keeps within the hollow space which it has made for itself: this is called its **Bed.** The sides of the bed between which it flows are the **Banks.** When it is swollen by rain it rises up to the banks; and if still more rain falls and more water comes down, it overflows its banks and covers the country all round: this is called a **Flood.**

5. Our baby brook could do no great harm if it did run over. No! but sometimes, as I will show you a little farther on, a flood may be a very terrible thing; and, though the mischief will not be seen up here among the hills, where the baby runs, yet the baby, and other babies like it, will have had a hand in the mischief, for they have brought down part of the water that makes the flood.

XI. THE WATERFALL.

1. 'BUT let us go on. I want to have some of you on one side and some on the other. Step across—it is narrow enough still—and run along each bank. Never mind thinking how you will get back! No doubt it will be wider in a little while; but we will find a way for you to come over. It will not

be as far for you as for our friend to go back to his home in the Moon! When I call to you, stop.'

2. 'Oh! but how shall we know which set you are calling to? If you only shout out "Stop, boys!" how can we tell which of us you mean?'

'Shall I say *right bank boys*, and *left bank boys?* Will that do?'

'But how are we to know which is the right bank, and which the left?'

'Let us try if we can settle that matter. Who would like to go in the middle of the stream? No! not so many; only one. Well, Green, you seem so pleased with our talk about the brook, that you shall be the wader. So, take off your shoes and stockings, and walk down the stream. You need not wade far; do not go beyond that willow tree just below.

'Now then, Green, look straight before you. Who are on the right bank?'

3. Green turns at once to his own right, and says, 'You, sir, and the boys with you.'

'Which on the left?'

'The others, who stepped over the brook.'

'Right, Green—quite right! Look *down* the brook, the way it flows; its right bank is then on *your* right, and its left bank on *your* left.'

4. Soon after leaving the willow, the brook makes a *sharp* turn to the left, and we notice how

it winds about, turning first one way and then another—

It winds about, and in and out.

This is because water always picks out the easiest path for itself. When it meets something in the way—a large stone, or a rock—it flows round it. In any one of the tiny rills you may see flowing along the road on a rainy day, you can try for yourselves how easy it is to turn it from its path. You can do this with a piece of turf, or a stone; but very soon the water turns again, and runs on the same way as before.

5. The path which a stream takes is called its **course.** It is very seldom quite straight; and I think you ought now to be able to tell the reason why.

6. But now, all of a sudden, it takes a very sharp turn to the left, so that we on the right bank have a longer round to take than the left bank boys. And now we can't see it; it is hidden among trees and bushes.

7. 'But listen! what is that rumbling, roaring sound? And hark how the left-bank boys are shouting! Run, boys, run! find out what they have come to. Ah, there it is! Is it not grand? See how it boils and tumbles, ten or fifteen feet below, amid large pieces of rock that have fallen *from above!*'

8. We scramble down, and stand at the foot of the rocks, watching the water dashing madly over them. You remember how it puzzled the Man of the Moon when he lost sight of the stream as it plunged down among the rocks, with the thick cloud rising over it. The cloud is the *spray*, or broken water floating in the air.

[A WATERFALL.]

'What shall we call this tumbling of the stream?' asks Green.

'Try if you cannot work out the name for yourselves. What is this that is tumbling over the rocks?'

'Water!'

'And what is the water doing?

'Tumbling.'

'Another word?'

'Falling.'

'So the name is—— '

'**Waterfall**!'

9. 'Yes; that is the best name, because it is the most English, and tells for itself what it means. There are other names, such as **Cascade** and **Cataract**, but you need not mind them much; one good name is enough. A cascade, really, is not quite the same as a waterfall, but for the present you need not try to make out the difference between them.'

XII. CONFLUENCES.

1. NOW notice how much wider the brook is than at the place where Green's wading began. Let us try to find out what has made it wider.

2. Charlie Chapman is the son of a farmer, and we are at this moment passing through one of his fields. He tells us that there is a deep ditch at

the lower part of the field, and that the drains carry into this ditch all the water that gathers in them. We soon come to the ditch, and find, after last night's rain, that it is almost full of water, and that it is, indeed, a little brook which is pouring its water into our larger one.

3. Some way lower down, the left-bank boys point out another little stream, whose waters make a pleasant chatter over the stones as they hasten to mingle with the deeper waters of our stream—

They chatter, chatter, as they go,
To join the brimming river.

So, from point to point, the brook is carrying away the water, and, as we say, *draining* the land. Much of the rain that fell on our side of the hill last night has found its way into the brook; and so, the further it flows, the wider it becomes.

4. Just at the bottom of the hill a rivulet almost as large as itself flows in. Smaller streams running into larger ones are called **Feeders**, because they 'feed' or supply the larger one with water. Very often they are called **Tributaries**, and sometimes **Affluents**, and the meeting of the waters is called a **Confluence**. These are long, hard words, and I must stop to tell you what they mean.

5. Do you remember reading that the Jews, in our Lord's days, had to pay 'tribute' to the Romans? When one tribe or nation conquered

another, it was often agreed that the losers should give over or pay to the conquerors a certain sum every year. This sum was called 'tribute,' and the weaker nation was said to be a 'tributary' of the other. You see, then, that the smaller stream is called a tributary, because it gives over its little stock of water, as tribute, to swell the stock of the larger one.

6. Now for *affluent* and *confluence.* You can see that the last part of each of these words is nearly the same—*fluent, fluence.* 'Fluent' means 'flowing.' 'Affluent' is 'flowing to'; 'confluence' is 'the place of flowing together.' So the small stream flowing into a larger is an *affluent*; the place of their meeting is a *confluence.*

7. Let us follow the course of our brook through the village and the meadows beyond. It is now flowing through a nearly level country, which just slopes a little towards the sides of the stream. It here meets a feeder, joining it on its left bank; and there one on its right bank. It must be near the end of its course, and very soon I expect to find another *confluence*, where our brook runs into a stream much bigger and wider than itself.

'Look out, boys! Scatter, and have a search for it. Well done, Johnny! You have found it first.'

8. It was hidden from us by a little rising

ground, covered with birch-trees and shrubs, and fenced in from the open ground. But walls, and palings, and bramble-bushes never keep back our Johnny! So, while we are quietly walking towards the wicket-gate, he scrambles over fences, pushes through briars and thorns, and stands at last, with a torn jacket and a bleeding face, above the bank, shouting at the top of his voice—

'I've found it!'

[CONFLUENCE OF THE CHERWELL AND THE THAMES.]

XIII. RIVERS.

1. IN this way we have found the end, or, as it is called, the **mouth** of the brook. The running water, which is fed by the waters of our own stream, and many others, at last enters the sea, by a mouth many miles wide. This very large stream of water is called a **River.** It has grown, as we have seen ours grow, from a tiny rill; and its source is, perhaps, hundreds of miles from its mouth.

2. In its course it has drained a very large tract of country, which is called its **Basin.** If you look at a map of England and Wales, your teacher will show you how rivers are marked on a map, and he will trace for you the courses of the Thames and Severn, our two chief rivers. Then look at the Tay and the Clyde in Scotland; the Shannon in Ireland; and, if you would like to have more examples, the Danube and the Volga in Europe.

3. Now, gather up the chief things you have learnt. You now know that *rills*, and *brooks*, and *rivers* are different names for streams of running water; and that they are called by these different names because they are of different lengths and sizes; that a brook is longer and bigger than a rill, and the river is the biggest of all.

4. The brook, you remember—'the little silver

thread of water'—was the Man of the Moon's first friend on this earth, the first thing he saw which he grew really fond of; and the river, which he came to later, put him into good spirits, and made him more cheerful and merry than he had been since he left his home. For there is something very cheering in a river, with its 'chatter, chatter,' and its 'sparkle o'er the pebbles.' No one ought to feel lonely who has a brook or a river to talk to. No children play more merrily than the little drops of water do that come dancing down the hill-side, and leaping over the stones.

XIV. FLOODS.

1. I PROMISED to tell you something about Floods. Now that you have seen the great body of water in a river, you can fancy what it must be for a river to become so full as to overflow its banks. Just think how you and your mother would feel, if you lived close to a river; and if, on a wild stormy day, when the rain was falling fast, your father came in, all out of breath, and told you that the river was rising, and would soon be so high as to pour into your kitchen, and perhaps rise higher still, till it was above the chimneys!

2. *Or suppose* you had gone quietly to bed at

night, and when you woke in the morning, the water was coming into your window; and, when you looked out, all the fields were covered over, and there was nothing to be seen but the top of the church steeple, and perhaps the chimneys of the highest houses! 'Ah! but,' you will say, 'this will never happen. It is like the visit of the Man in the Moon—you are only "supposing."'

3. But I am not altogether 'supposing.' I once saw a picture of a poor family huddled together on a little patch of ground in the middle of the water. These poor people were a boatman, named Sandy Smith, and his family, who lived fifty years ago in the north of Scotland. There was their house, all covered except the chimney and the roof and a little bit of a window. Their cows and horses were with them; and they had to stay where they were, and wait for some one to come in a boat, and fetch them off this little spot of land. If no one came, they would be washed away and drowned. And there were hundreds of others as badly off as they.

XV. FLOODS.

(*Continued.*)

1. I CAN tell you of another flood which took place in Yorkshire. It was not a river, this time, that did the mischief, though the water ran down the *bed* and *basin* of a river. A great deal of water was needed there, to be turned into steam, to work the cloth-mills, and it was stored up in a large deep hollow place in the hills, called a *reservoir*; and round this reservoir was a strong bank, to keep it in, and let it out as it was wanted by a few openings.

2. But the bank was not strong enough, and there had been heavy rain; and many small streams ran into this reservoir, and all were swollen by the rain; and so the water rose higher and higher in it, and began to trickle and then to pour over the top of the bank, and then the bank itself gave way a little, and the water oozed out here and there. So it went on through a whole day, but still very little water got through. A few people saw it, and told those who lived below that they were in danger. But they laughed at them, and thought that the bank, which had stood so long, would stand a bit longer. Anyhow, they thought they should have time to get out of the way if the water did come. So they went to bed.

3. But, in the middle of the night, those who were awake heard the clatter of a horse's feet, as he galloped along as fast as he could go, and a man's voice shouting as he passed, 'Up! away for your lives! The flood will be on you in a few minutes!' And, sure enough, the flood was close behind him. That horseman saved his own life, though he had so bravely ridden before the flood, to warn others. But very few of those sleepers awoke in time! On it came, sweeping away houses and mills and all that were in them, as if they had been houses made of cards; and by morning you could trace its course by broken bits of trees, and roofs of houses, and by the black mud that covered everything; and out of that mud, for days after, they dug up many bodies of those who had died that awful and sudden death.

4. Let me finish this lesson with something more cheerful. There is a famous river called the Nile, which flows through the land of Egypt. You read about it in the Book of Exodus, though there you are not told its name—it is called only 'The River.' When the Nile runs over its banks—as it does once in every year—the people of Egypt are not afraid, but are glad. It comes very gently, and they build their houses on the highest spots, so as to be out of its reach. But they are glad, because it is the Nile that waters the ground; and, if it did

not overflow, their crops would not grow, and there would be a famine, for they have very little rain.

5. So, you see, river-water, like everything else in the world, is meant to do good and not harm. The harm comes but seldom, the good is done every day and every year. Most of what is bad for us could be stopped, if people were careful, watchful, and prudent. We may do a good deal to guard against floods. But the Nile rolls on for ever, and most likely will water the thirsty soil as long as the world stands.

XVI. PLAINS AND VALLEYS.

1. NOW, which way shall we go? Shall we follow the river downwards to its mouth, or upwards to its source? If we did the first, we should come to the sea; if the second, to the hills. The day is so fine, and the hills are so clear, that I think we had better go for a good climb, and see the view from the top.

2. How different the country looks from what we came through, as we walked by the side of our little brook! The bed of the brook was shut in by the high ground on each side. Here the ground is open for miles on each side: before us we can see hills, but they are far off, and close to us all is flat. Open tracts of country like this are called Plains.

3. In a small country like ours they cannot be of great size; but in some parts of the world there are vast plains, bigger than England and Scotland put together. Some of these are quite barren, with a few fertile spots here and there. The greatest of all is the *Sahara*, in Africa.

[IN THE DESERT.]

4. It would be hard to make you understand what a dreary part of the world this **Desert** is. We are told that much of it is without life of any kind: there are no plants or animals—'not even an insect is heard, and no tree or shrub is seen during many days' travel.' The few fertile spots with their wells of water, which gladden the hearts of the thirsty and weary travellers, are called **oases.**

5. In North America there are large districts, called **prairies**, not level, but swelling gently up and down, and mostly covered with grass. South America is, more than all other parts of the world, the land of plains. Some are quite without trees, but are clothed with grass, and quite level; others are covered with trees and creeping plants, and watered by mighty rivers. In Europe nearly the whole of Russia is a low-lying plain, which looks very dreary: 'There are no roads, and one may travel for hundreds of miles over the level surface of the ground—over the turf in spring, through the thick dust in summer, and over the snow in winter, without seeing a single object rising above the general surface.'

6. We do not find it like this on the plain we are walking over, nor should we find it so anywhere in England. All is fresh and green round us—woods and grassy fields lie on each side. Before us we see a line of low hills, and behind us is the sea. Now turn and look back. We seemed to be walking on level ground, but we are a good deal higher than we were; for the ground has been rising, though very slowly. And now look across the plain. There is the sea, bright and blue, and sparkling in the sunshine, and looking from here as if it never could be angry. We shall know it better by-and-by!

XVII. HILLS AND MOUNTAINS.

1. As we get farther up the plain, the hills are closer to each other than those behind us; and so the plain is slowly becoming smaller and smaller. Now, there is only a strip or belt of land on each side, and very soon, we shall have to pass through quite a narrow opening in the hills, and then go along a mere path or roadway by the side of the river.

2. Here we are at the opening, or (as it is called) the **Gorge**, through which the river is forcing its way into the plains. It is deeper and more rapid than it was below; because the water is, as it were, *squeezed* in between the rocks in passing through the gorge. 'Take care, Johnny!—keep steady for a little while, till we have passed this dangerous spot: by-and-by you shall run free to your heart's content.' We are now in a deep hollow, with the hills rising high above us.

3. 'Just like the first bit of our walk, alongside the brook,' says Green.

'Yes, it is the same sort of ground: both are what are called **Valleys**; but this is wider and longer and steeper, rising very fast towards the tops of the hills. It was, you remember, through such a valley as this that the Man in the Moon came down, after he had left the snow and ice behind.

4. 'No, Johnny, no, not so fast! We are not

[THE GORGE.]

going to climb yet. We shall see more, and do better, *by keeping* below for a mile or two. Look round for one moment. There, below you, is the long valley; and we are now as high as the tops of the hills on each side of it. But right before us are

[CHAIN OF HILLS.]

others, which look as much above us as they were at first. The first were what are called **Spurs**, or offshoots from the main line; before us is the main line itself. Now, at last, we leave the road, and we begin to climb in good earnest.' Long legs *have the best of it* here. But Green and Charlie give Johnny a hand each, and help him up till very near the top, when he breaks away from them, clambers up a little mound, and shouts out once more—

'I'm first!'

'Yes,' says Green, 'just as the wren beat the eagle!'

5. 'Now rest, and look about you. Mark, on each side, as far as you can see, the long line of heights, some higher than where we stand, some lower, and joining them a ridge of high ground, all stretching the same way, in something of a straight line. What name shall we give to this long ridge? Shall we call it a *bar* of hills, or a *string* of hills?'

6. 'No,' says Green, 'that won't do; for a bar or string is even all along. Here there is a number of different hills joined together.'

'Well, then, think of anything you know, which is made up of many parts, but can be formed into a pretty straight line.'

'I know,' cries Johnny; 'my father measures land, and his measuring chain is just like that—ever so many little bits worked into each other; and when he stretches it out on the land, he tries all he can to keep it quite straight.'

7. 'Well done, Johnny, again! *Chain* is the word. When hills lie in this way alongside each other *in a sort of* road, we say they form a Chain.

The higher points, which shoot upwards above the rest, are called **Peaks**. But, of course, it is rather a rough sort of chain; there are so many ups and downs, and ins and outs, that it does not lie as smooth and even as Johnny's father would like *his* chain to lie.'

XVIII. HILLS AND MOUNTAINS.

(*Continued.*)

1. 'NOW, are you all ready to start again? Come here, then, and stand on Johnny's throne, this topmost mound. I have here what is called a *field-glass*, or small *telescope*. You know what this hard word means—a set of glasses fixed in a long case, which makes things look very much larger, and so lets us see them plainly, even when they are a long way off. If I had a large one, and if our friend from the Moon were here, I should like to teach him how to use it, and then show him how much he might see through it of the hills and valleys of his own little world. I think he would say that, if he ever got back, he would take one of them with him, and have a good look at *us!* However, take my little one, put it to your eye, hold it quite steady, turn your back on the valley we came up, and look the other way. What can you see?'

2. 'I see a peak as high as this we are stand-

ing on, and perhaps higher—and there is another and another, and another! But I can't make out any straight line; they don't seem to run in a chain like this, but one here, one there, anyhow.'

3. 'So these look like boys drawn up for drill, and those like boys doing as they like in the playground. Now, if I came through the playground, and found you all there in no order, but mixed up with each other, I could not say, "There is a row or a line of boys;" but I should most likely say, "There are some boys in a *group* or cluster." And so, hills scattered about in this way are said to form a **Group**. We will go over to them soon, and see what we can find at their feet. But, before we leave this ridge—our watch-tower, as we may call it, for we can see everything for miles around us—let us stop and think whether any of these things are like those we heard of in the journey of the Man of the Moon.'

XIX. HILLS AND MOUNTAINS.

(*Continued.*)

1. 'I KNOW,' cries Johnny, 'these hills are his friends with the white nightcaps.'

'Wrong this time, for these are not white, but green. See the grass all round.'

'Well, then, they are nightcaps' *children*—the *little ones* he came to afterwards, as he went down the great rivers.'

'Yes, the *little ones*, no doubt, were *hills*, such as these we are on now—ground rising high above the plains, the valleys, and the sea.'

2. 'But where are the *nightcaps*? Are they the heights over there, in the *group*?'

'Look again and see. Ah, but that won't do; you must slant the glass upwards, or you won't see their tops; for they are a good deal higher than where we are standing. Now, then, can you see them? Have they white nightcaps?'

3. 'I see the tops of some of them, but they are not white. Oh, yes! I can just spy a patch or two of white, here and there, in corners and crannies. But, if these are their nightcaps, they are very ragged ones! For there is only a scrap here and another there.'

4. 'Quite right, Green, your eye is very true; there are no great nightcaps here. Where the Man in the Moon came down, there were much greater heights; and on these the snow lies all the year round without melting, and so, of course, their tops are always white. That *group* we see is really a group of *mountains*, for they are more than 2,000 feet above the sea; but they are not very high mountains; and by this time of the year, the month of June, almost all the winter snow has melted.

5. 'You remember the lines in the little poem in your Reading Book :—

> It was a cove, a huge recess,
> That keeps till June, December's snow.

The poet meant that this "cove," where the sun could never shine, would keep its snow when all round it had melted. It must have been in some such coves, or clefts in the rocks, that Green spied the torn pieces of the nightcaps.'

6. 'Then,' says Johnny, 'hills and mountains are like adjectives : they have three degrees of comparison, *high*, *higher*, *highest*. This *chain* is high ; that *group* is higher ; old *nightcaps* are highest.'

'Very true, Johnny ; but, as it happens, we have only two names for them.'

XX. HILLS AND MOUNTAINS.

(*Continued.*)

1. 'BUT what is a hill ? When I run up to the top of our garden, I can see over the cottage ; am I on a hill ?'

'Yes, you might certainly say you had run *uphill*. But we do not give the name to very small heights, and none are called mountains which are less than 1,000 feet above the sea.'

'A thousand feet ! how much is that ?'

'How tall are you, Johnny?'

'Three feet and half an inch.'

'Well, then, it would take 330 Johnnies, one standing on the head of the other, to make a mountain.

2. 'Or we may take a better measure. The tower of our church is 100 feet high; you know how it looks. Suppose, then, ten such towers standing on each other; that gives you the height of a *mountain*. We are now about 500 feet above the sea; some peaks in the group over there are six times as high; the highest of our mountains, called Snowdon, is about 3,500 feet. But, where the Man in the Moon came down, which I think was on the Alps, he was at such a height, that it would take more than four Snowdons, or 150 church towers, piled one upon another, to come up to the same level.

3. 'And, in some parts of the world, there are mountains twice as high as that. Most of them have hard names, but the very highest happens to have an easy one, *Mount Everest.* Now and then, but not very often, mountains stand alone.

4. 'Now, who can tell us something else that our friend came to on the slope of the mountains, which we shall not find here? Don't you remember the hard, smooth stuff which he found below the snow, and how it began to move under his feet?

That, you all know, was ice; and when it began to move it was a **Glacier**, or a river of ice. We have no glaciers in this country now; but they were here once, long, long ago; and I have seen great stones on hill-sides, which must have been carried by them to the spots where they are found.

[A GLACIER.]

5. 'And then, the rolling ball of snow that came tumbling down, and broke before his feet!'

'Oh,' says Johnny, 'that was a snowball; we make plenty of them. Only, I don't know who there was to throw it at him, unless it was his friend from Jupiter, come back for a bit of fun.'

6. 'Yes, Johnny, I dare say you know all about snowballs! But that ball was too big to be used for play. And I think even you would have run out of the way, if you had seen a ball big enough to cover over your father's house, and the church, and the mill, all at once, come thundering down towards you. These big balls are called **Avalanches**; and I could give you many true stories of travellers and villages being swallowed up by them. They give no warning: the loose snow hangs on the top, and then all of a sudden down it comes, and there is no escape.

7. 'Here is a true story of another kind, to show you the dangers of mountain country, such as that on which our friend alighted. Four English gentlemen went with three guides to climb up a very steep and high mountain. Two of the gentlemen had climbed many mountains, and knew all about it. The other two were younger. They got safely to the top; but the hardest part of the work was to come down. The safest way is thought to be, for all to be tied together by a strong rope; so that, if one slips, the others may hold him up.

8. 'When they had got a little way down, the gentleman who was going first slipped, and fell forward on the leading guide; the guide lost his footing; the others pulled hard at the rope, and might perhaps have saved them. But the rope

broke! and three gentlemen and a guide went sliding down the smooth sheet of ice so fast that they could not stop; and the one who was left saw his friends, one after the other, fall over the mountain side, down hundreds of feet, on the sharp, jagged rocks below! Three of the bodies, I think, were found some days after. But one at least was searched for in vain.'

[THE ACCIDENT.]

XXI. VOLCANOES.

1. 'THERE is another kind of mountain, which I cannot show you, because we have none of them in England. Do you know what happened to the Man in the Moon, just after he had crossed over the blue sheet of water, and come to land again?'

2. 'He caught sight of a burning mountain,' says Green. 'Yes!' exclaims Johnny, 'but wasn't he a coward to turn back so soon? I was hoping to hear of his climbing up to the top, so as to tell us what he saw there. *I* should have gone on!'

3. 'Very likely, Johnny; but I'm not so sure that you would have come back again! The smoke from these *Volcanoes*, as they are called, is really stifling; and even if you had got through that, you would wish yourself safely at the shore again! For there is not only flame at the top, but large hot stones are thrown up into the air, and the *lava* is rolling down the sides.'

4. 'What is **lava**?'

'Lava is the name given to the rocks or minerals inside the mountain, which have been melted by the great heat, and flow out of the hollow top or *crater* like a stream of fire.'

'How funny!' cries Johnny. 'I used to think that all streams were running *water*. The Man in the Moon came to a stream of ice; and now we have a stream of fire!

5. 'Is there a furnace down below? And is an engine set to work every now and then to make a show of fireworks?'

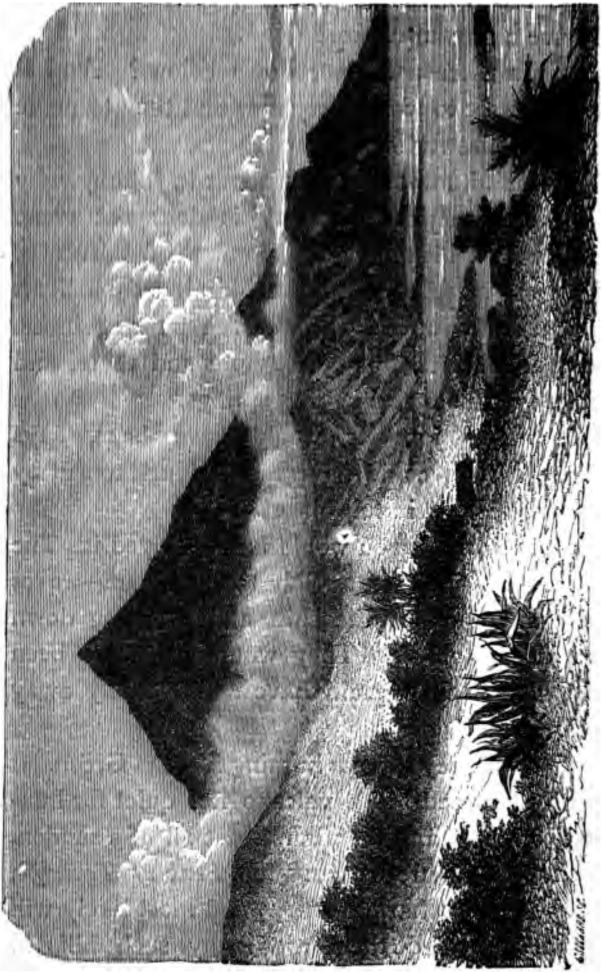
'I don't know very much about it, Johnny, why it comes sometimes, or why it does not come oftener. This is one of the wonders of Nature, of which we must be content to know only a little. But we do know that there is fire burning inside the Earth which bursts out here and there, and makes volcanoes and boiling springs.'

6. 'How jolly it would have been,' says Johnny, 'if we could have had the luck to sail by just when it was in full blaze!'

'I don't think you would have enjoyed it. The sea would have been terribly tossed about—waves rolling high above the ship, and plunging down into deep hollows. They would all have been very glad if they could have sailed safely away from it.'

7. 'Are they always burning?' asks Green.

'No! sometimes a volcano lies quiet for hundreds of years, and then bursts out all of a sudden. Here is a picture of one—the *Peak of Teneriffe*, which is quite harmless now, and most likely will remain so. And there are many such hills in England, which we are sure were volcanoes once,



[PEAK OF TENERIFFE.]

though we have no reason to think they will ever burn again.'

8. 'And yet we ought not to be *too* sure! Once upon a time, there were two cities in Italy, at the foot of *Mount Vesuvius*, full of rich and gay people, living in grand houses, and thinking of nothing but amusement. If anyone had said to them:—"*Are you not afraid to live so close to that mountain? Don't you know it once was a Volcano?*" —they would have answered with a laugh: "It has never been burning in our day, or the days of our fathers, or our grandfathers! It is not likely to begin again now!" But it did begin without a moment's warning, and buried both the cities in lava and ashes; and of all those gay people very few escaped to tell the tale!'

9. 'Then,' says Green, 'is there no danger of the fire inside bursting out some day, in many places, and so fiercely as to burn up the world altogether?'

'*Some* day, I believe it will; but that will be the *Last Day*, when "the elements shall melt with fervent heat, the earth also, and the works that are therein shall be burned up."'

XXII. ILLUSTRATIONS.

1. 'Johnny! are you ready to go down the hill?'

'Not quite yet; I want a little more rest.'

2. 'Well, then, let us spend a few minutes in talking over what we have seen. What came first?'

'The Spring, the Brook, the Waterfall, the River, the Affluent, and the Confluence.'

3. 'Springs and Brooks we can find on every hill-side. Which did we say were the chief English Rivers?'

'The Thames and the Severn.'

'Yes! Each of these gives us good examples of *Affluents* and *Confluences.* You see, even in this little map, how many streams run into the Thames, and each of these, like the Cherwell, of which you saw a picture, forms a Confluence.

4. 'One other English river is worth noticing—the Yorkshire Ouse; because, though it is not a very long one, it is *full* of Confluences: at every few miles, some stream comes running down one of the Yorkshire valleys, to join it in its journey to the sea. And, at last, the Ouse itself forms a great Confluence with the *Trent,* which runs to join it from Derbyshire.'

5. 'Then, the Trent is another Affluent of the Ouse,' says Green.

'No! the two are of equal size: so the open mouth does not take either name, but is called the *Humber*.'

6. 'For a good *Waterfall*, we must go to Wales. A little river, the *Rheidol*—here it is on the map, a few miles to the east of Cardigan Bay—comes over some grand-looking rocks; and if the river itself had only a little more water in it, it would be a fine Waterfall.

7. 'Our largest *Plain* is Salisbury Plain in Wiltshire. For *Valleys*, I should take you to Yorkshire, where they are called *Dales*; and as you go up the dales, you have *Spurs* of the mountains on each side; and then, at the head of the dale, you come to a number of heights stretching each way in nearly a straight line. What are they called?'

'A Chain! a Chain!'

8. 'Yes! the great *Pennine Chain*, stretching from the borders of Scotland nearly to the centre of England. Another Chain, not so long or so high, is the *Cotswolds*, in the south-west; and in the south-west corner, there are some lower still—the *North* and *South Downs*, and one or two others.'

'South Downs!' cries Johnny; 'is that where the famous mutton comes from?'

'Yes, Johnny, those hills have famous pasture for sheep.'

9. 'Where shall we find a Group?' asks Johnny.

'In Cumberland and Westmoreland, where they are called the *Cumbrian Group*. And then, our highest—the *Cambrian Range*—mind the spelling, Johnny!—which cover nearly the whole face of Wales, except a strip of level ground near the sea.'

10. 'And Peaks?' says Green.

'You may find them in every group and every chain: the highest are *Scafell* and *Helvellyn* in the Cumbrian; *Snowdon* and *Cader Idris* in the Cambrian; *Crossfell* and *The Peak* in the Pennine.'

XXIII. THE TABLE-LAND.

1. 'NOW let us really go down. It is too steep here, Johnny? But run on a few hundred yards to the southward—yes, towards the Sun—and I think you will find an easier way. Here, you see, there is a break in the ridge, and two spurs branch off to the westward. We can pass easily between them, and get gently down.

2. 'Now the ground opens again, and we come out on the level piece which we saw below us as we stood looking over towards the group, thinking about our map. Just so, you remember, the Man

of the Moon found an opening and a level piece of ground, after he had left the snow-capped mountains behind him. This opening we have just *passed* through is called a **Pass**—I need not tell you why; this flat piece of ground is a **Table-land** or **Plateau**—two names—one English, one French. The English one is the best for you to remember; and you can tell at once what it means. A table is flat; so is the floor. But the floor is under our feet, while the table is raised a good way above it. So we call a level piece of land, lying low down, a **Plain**; but a level piece, raised high like a table, is a *Table-land.*

3. 'There are no very large or very high Table-lands in England: we have a *slanting* table on the east side of the Cotswolds. There are steep slopes on the west side, and gentle slopes, *almost level,* on the east. There is one country in Asia, called *Thibet,* the whole of which is a great Table-land, thousands of feet above the level of the sea, a good deal higher than our highest mountain.

4. 'We have now come to the edge, as the Man of the Moon did, and have to go down a steep zig-zag path. Take care, Johnny! Remember, you were not born among mountains. I have seen Swiss boys, when I was going down a path like this, and very tired of its turns and twists, come rolling over the grass, as if they had no arms

or legs to be broken, and somehow they got safely to the bottom. But I don't think English limbs would stand it so well.

5. 'However, here we are at the bottom; before us is another open plain, and beyond it the mountain group we want to reach. But see! what is that? It is a railway train, and there is the station. Run, boys, run! If we can catch the train, it will save us at least two hours, and we know what a plain is like, from what we have seen on the other side.

6. 'See, as we are whirled along, what a good view we get of the "Chain" we have just left; and how the "Spurs" stretch out to the north and south of us, leaving the open plain between them. There is another river, flowing northwards from its source in the corner where the Chain and the spurs meet. We cross it as we go westwards, and very soon we are in the heart of the group.

7. 'Now, leave the train, and let us find out what there is to be seen that we have not seen before. "Shall we climb up any of these hills?" asks Green. No, I think not: we have had enough of climbing for one day, and we should not see so much as we have seen from the ridge. For these hills, though they are higher, are so shut in by each other, that they do not give you so wide a view.

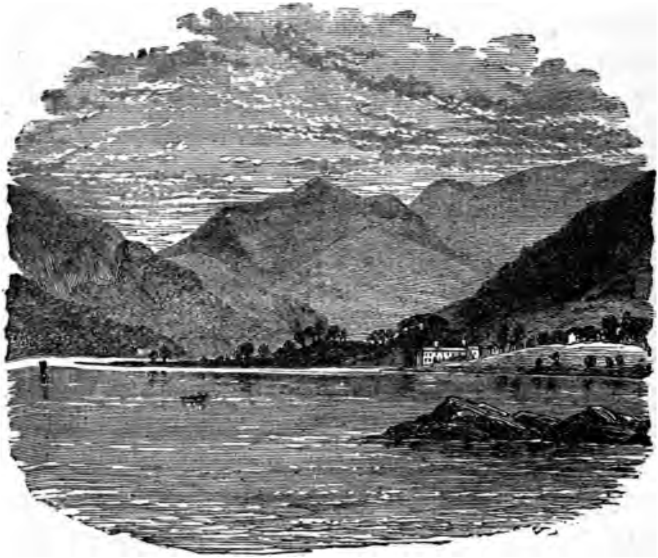
8. 'But, besides, it would not do to-day. Look up. What do you see at their tops? "Ah!" cries Charles, "if the Man of the Moon were here, he would say that the air of these was as thick as what he found on his white-capped friends on his first morning. I can't see the very tops at all!" No! there is what is called a thick *mist*, which often gathers round the tops of mountains. If we were up there, we should find it quite damp, and we could hardly find our way down again.'

XXIV. LAKES.

1. 'LET us see what we can find without climbing. Take this path, round this little hillock, and what do you see now? "The Man of the Moon's great sheet of water, and the little silver thread, the 'baby'—no! the 'baby grown older'—running out of it!" Yes; not quite so bright and sparkling as his; for he, I think, came down under brighter sunshine than ours. But it is very like it—it is what we call a **Lake**: all round it are the hills, most of them clothed with trees at the foot, and behind them are the bare and rocky mountains.

2. 'It is very lovely. The most beautiful spots in England are among its lakes: here is a view of one of them, *Lake Windermere*. And in Scotland

there are some finer still, especially *Loch Katrine.* You see, the Scotch people change the name a little, and call it **Loch**, where we should say *Lake.*'



[LAKE WINDERMERE.]

3. 'But how is it,' asks Green, 'that all the water does not run away through the stream that we see flowing out at the lower end?'

4. 'Because the ground is hollow, and is so shut in by the hills, that there must always be some water left. And that is the reason why you have the lakes here among the *group*, but not in the

chain—at least, there are none large enough to be much noticed. The group shuts in the water; the chain lets it run free in streams and rivers; and sometimes there are hollows, where lakes are found, even without hills close to them.

5. 'Then, if we were to go round, or row across to the other end, we should find a good many little silver threads running into it, and "feeding" it, just as the brooks on the other side fed the great river.'

'That's not fair,' says Johnny, 'that the babies should feed the big brothers.'

6. 'Well, then, do you like this better? There are some lakes which are fed by great rivers, and send out no water at all. The largest lake in the world, so large that it is called the *Caspian Sea*, is one of this kind: you will find it in the Map of Asia.'

'I should call those the *greedy* lakes,' says Johnny.

7. 'Then, there are some which send out streams and yet have none to feed them. What should you call them?'

'The *wasteful* lakes!' says Johnny.

8. 'Yet I think they must have a supply from somewhere. If a man went on spending, and yet earning nothing, what would become of him?'

'He would soon be in the workhouse.'

'So, if the lakes went on pouring out water and receiving none, they would soon be dry. Where does their supply come from? Think! What supplied the brook?'

'Oh! to be sure,' says Green, 'the spring!'

9. 'So these lakes are not so wasteful after all. They have springs somewhere below them. They are like a man who is always giving to his neighbours, and earning nothing. Yet he is not wasteful, because he has plenty of money hidden away in the bank. The *springs* are the bank, and it never fails.'

XXV. THE TOWN.

1. WE must now leave lakes and mountains, and follow this stream. We know where it must lead us to, if we follow it far enough; for all rivers—at least, all in this country—run into the sea. Let us pass quickly on to its mouth, for that is the only part of a river which we have not yet seen.

2. One thing we may notice as we pass. You remember that just after the Man of the Moon left this lake, he came to some stiff-shaped things, which he thought not nearly so pretty as the rocks and hills he had left behind him. Could you guess what these were? They were houses. He had come to a town, and it seemed stranger to

him than anything he had yet found. For whatever else he had seen in the Moon, I don't think he had seen any towns. Mountains have been seen, and peaks, and valleys, and plains, and the beds of seas (though it is thought there is now no water in them); but nothing like houses or towns.

3. However, we are not going to stop to look at this: we have to do just now with the world as God made it, not with the works of man. Only, as we pass, let us note the names we give to clusters of houses. There is a little group of half-a-dozen; that is a **Hamlet**: there are forty or fifty; that is a **Village**: a place with a thousand people or more in it; that is a **Town**: and there is one, not larger perhaps than its neighbours, but it has a great Church in the middle of it; that is a *Cathedral*, and the place is a **City**. These are the chief names: I do not care to stay talking about them, for we are hurrying on to catch a view of the Sea.

4. If you live in the country, you know what a village is—very likely you live in one; and you know a hamlet, or small cluster of houses, even if you do not know the name. All of you know the name of some large town, and most of you can tell what is the largest town in England. Of course, there are not so many cities: the chief one in England is *Canterbury*, in the east of Kent.

XXVI. THE SEAPORT.

1. 'AND now we have gone by the town, and are really coming to the mouth of the river. You remember that our friend from the Moon came twice to river mouths; first, when he came down to the sea along the banks of the stream that flowed from his bright sparkling lake; and afterwards, at the end of his journey, when he was close to London. The first, you remember, split up into many mouths: the second, which must have been our great river, the *Thames*, had only one, but (as he said) "opened it wide enough!" So there are two kinds of mouths: some are single, like the Thames; others have two or three or sometimes many branches. We will suppose the stream we are following to have only one, and, a little later on, I will tell you about the others.

2. 'As we get nearer to the Sea, we observe two or three changes in our river. It gets larger: that, of course, is because *tributaries* or *feeders* are running into it on both sides. But see! A very curious thing! Johnny has got hold of a piece of wood, and has been amusing himself by trying to float it down the stream, like a boat. But now it won't go on: nay, if you watch it, you will see that *it goes the other way, up* the river. He has taken

it out, and carried it a little way, and then put it in again. But no! it *won't* float downwards; it is stubborn, as Johnny says, and wants to go home! Why is this? How is it that the stream seems to have turned backwards, and to be running the wrong way, from the sea towards the mountains?

3. 'Wait a little, and you will see more of this curious thing: for the present I will only give you its name. This is the **Tide**, which rolls in from the sea to the land, and runs up the mouths of great rivers; just as the Man from the Moon, when he got near the land, felt the waters carrying him on towards the shore.

4. 'One other change. Look at the *colour* of the water. It was bright blue, or clear white, up in the hills; now it is dark and muddy, and a little way farther on we see it is broken into foam. "Like froth on the top of a glass of beer," says Charlie. The dark muddy colour is caused by our being close to another town, which is called a **Seaport**, or properly a **Port**—a place where ships come and go, bringing cotton, or wool, or corn, or tea, or sugar, from other countries, and taking out calico, or cloth, or knives, or anything else that is made in England.'

5. 'But who are those fellows with black faces?' says Charlie, 'and those at the other ship, with their clothes all stained a dirty-red colour?'

'The black-faced fellows are loading that ship with *coal*, and the others have been getting out the *iron* which is found here. So none of them need be ashamed of the stains: they all come from honest work; but their work spoils the beauty of our pretty river.

[A SEAPORT.]

6. 'The word *Port* really tells us what such towns are. It comes from a word which means *to carry*: so *Port* is a place where people *carry* goods *in and out*. The goods which are *carried* out are

called **Exports**, because *ex* means *out*; and those which are *carried* in are called——"*Inports*!" shouts Johnny. Not *quite* right, but very nearly. Change the *n* into an *m*, and it will sound better—**Imports**.'

XXVII. THE ESTUARY AND THE HARBOUR.

1. At last we reach the shore. Here is the white broken water which we saw far off. See how the foam is tossed into the air: what is the cause of it? It is the tide meeting the stream.

2. In long narrow inlets the tide runs very strongly. The further we get from the entrance to the inlet, the less space there is for the water, and the stronger becomes the flow upwards. The tide meets the water of the river flowing downwards and so strong are the two currents, that the waters lash themselves till they boil and foam.

3. This 'boiling' up of the water gives a special name to these large river-mouths. They are called **Estuaries**, which means *Boiling-places*. Now that you have seen one of these, you will be able to remember how the water foams up, like the bubbling in a kettle when it is boiling; and you will keep in your minds the meaning of the word. In Scotland they have another name, **Firth**; and

in Norway, which is just opposite to Scotland, and not very far off, the name is nearly the same, **Fiord.** The largest *Estuaries* in England are those of the Thames and the Severn; the largest *Firths* in Scotland are those of the Clyde and the Forth.

4. There are other names, which we need not attend to at present. But we must stop for a minute to notice one thing, before we say good-bye to our river and its estuary. You have seen the ships loading and unloading close to the town or port. Now see how many ships are lying quite still in the estuary, and mark those others far out at sea, all sailing this way. See how calm the water is here, and how rough a little way out. There is a *gale* at sea, and these ships are coming here for shelter.

5. These places, where ships find shelter, are called **Harbours**; or, if they are open at both ends, **Roadsteads**, that is, places where the ships can *ride* (as sailors say) at anchor. It is a great thing for a country to have good harbours; and it is a sad thing for poor sailors when they have to pass a coast that has none.

XXVIII. THE SEASHORE.

1. YOU remember how we followed our little brook till it poured its 'tribute' into the lap of the great river, and then followed the river till it was lost in the sea. If you look back, you will see that I brought the Man from the Moon to the very same point; and that, after all he had seen, he was so struck by the beauty of the view, that he stayed some time, going along the edge of the water, and amusing himself with what he found there. I fancied him then standing beside one very bright calm sea that I knew of. All seas are not bright and calm, but all are full of beauty.

2. Some of you, I dare say, live by the sea-side; and others have been taken to see it, and enjoy, though perhaps only for a few hours, the pure air and fresh breezes. I am not going to speak of the sea yet, but about the edge of the land which is washed by the sea, and which we call the **Coast**, or **Shore**.

3. Let us take another little walk along the shore. See how high the rocks rise above us, and how the sea dashes against them! Johnny wants to climb up, but he finds them too steep for him. These rocks are called **Cliffs**.

4. What funny holes there are in them! There

is a great hollow cave. Yes; and there is a high point like a sugar-loaf. And there is one great rock which seems to have quarrelled with the others, and is standing out all alone, like a sulky boy! What made all these curious shapes? The sea has been beating against them for hundreds and hundreds of years, and so has worn away all the softer parts, leaving these sturdy hard fellows standing.

5. But look! We can't go straight on any farther; the cliffs are right before us, and we must turn and go along the foot of them, as if we were going to walk into the sea. Steady, Johnny! don't be in a hurry: if you go too fast here, you may perhaps go and pay a visit to the fishes; for this is a very narrow ledge, and there is so much wet sea-weed on it, that it is slippery. Now then, go quietly round this point of rock, and we shall soon be on easier ground. But stop a minute: there is a piece of solid rock here, which will let us stand back, and look up at the cliffs above us.

6. Do you remember how the Man from the Moon looked up at the bold rock which he found standing out alone, and looking down upon the sea? Well, here is another like it. I *must* give you a long word for once! this is what we call a **Promontory**. A little farther on we shall find a point of land, and we must find another name

7. In the meantime we have got round the promontory. What a different bit of coast! The land slopes gently down to the sea, so that we can walk on the grass, quite close to the water.

[A PROMONTORY.]

8. A little farther on, we come to the point of land I spoke of. See how it juts out into the sea, like the promontory, only so low that you almost expect to see the water wash over it. We need not care to go round it; no one would stand to look at it; for a low **Cape** (as these points are *called) has nothing* pretty about it.

XXIX. THE TIDE.

1. BEFORE we turn back, just look at this piece of water between the promontory and the cape. With these on two sides of it, and the line of coast we are walking along on a third, it is almost shut in by the land, or (we might say) it is *let in* to the land, as a door-plate is *let in* to the door. So, it is easy to see why it should be called an **Inlet.** It is also called a **Bay**, or **Gulf.** That which we crossed over with our friend from the Moon was a bay, with a wide opening; *this*, we suppose, is narrower, and we should call it a gulf.

2. We stroll back gently, and are very glad to leave the rough grass, and go down to the sand below. There seems to be more of it than there was when we passed before. If you watch the sea in such a place, you will notice that it is always either going away, as it were, from the land, or flowing back again towards it. This is the effect of the *Tide*—the same stream which met the river at the harbour.

3. We are now coming back to our promontory. We have been so busy talking about the rocks and the sand, that we have not taken notice how time was passing, and we have not looked much

at the sea itself. But now, Johnny as usual runs on first; but, just as he gets to the point——

4. 'Wait a bit, Johnny!' cries Green, 'look out for that great wave!' And, just as he speaks, on comes the wave, back skips Johnny, but not quite quick enough, for he gets a very good salt water shower-bath all in a moment, and there is nothing to pay for it!

5. 'Well,' says Johnny, as he comes back to us, very wet, very cross, and a little frightened, 'but what's the meaning of that? We got round that point quite dry, when we came; and why should that nasty old wave come and give me such a ducking now?'

6. We all laughed at Johnny's being so angry with the wave. But, sure enough, when we got up to the point, we could not get by! The rocks on which we had stood to look up were all covered with water, and the waves (like Johnny's friend) were dashing high up the promontory itself.

7. 'Well, boys, all I can say is, that it might be much worse. We can't get by here for an hour or two, unless Johnny can bid the waves stop and go back, to let him pass. And that, I fancy, they won't do for his bidding.

8. 'There was a great king once who tried it, and sat in his chair on the sands, when the tide was coming in, to see if the waves would do what he

told them. But the waves came on all the same, and would soon have washed away king and chair and all the lords round him, if he had not got up and taken to his heels, just as our king Johnny did just now. But we have only to go a little way back, and get on the grass again, and we can sit down and talk about it, till there is room for us to pass round the point.

9. 'Suppose, now, instead of this grassy slope there had been steep cliffs, like those we saw at first. What should you have done then, Johnny? You could not have climbed up them: the water would have risen higher and higher. See! it has covered all those sands we were walking on. You would have crept nearer and nearer to the cliffs, but still it would have followed you; and at last you would have been lucky if you had found some high stone or little shelf of rock, where you might have perched like a crow on the top of a tree, till it was safe for you to come down again.

10. 'But it might happen, as it has happened to many people, to be caught in this way under the cliffs, and *not* to find any safe perch. I know a story of two boys who had made their way to a cave on the sea shore, looking for pretty stones and shells; and there they stayed, I think, a whole night or a great part of it, and might have had to stay much longer if their friends had not come in a boat to fetch them.'

XXX. THE VOYAGE ALONG THE COAST.

1. 'A BOAT!' cries Johnny; 'I was never in a boat. Why shouldn't we take one, and row out over the sea, and see what we come to?'

'Not a bad plan, Johnny, if you can manage to sit still. There is a good safe one, and two steady-looking boatmen. So let us go.'

2. 'Do you know what one of the men is saying to the other? "Look out for the **Breakers**, Tom!" And Tom does look out well, over his shoulder. What does he mean?'

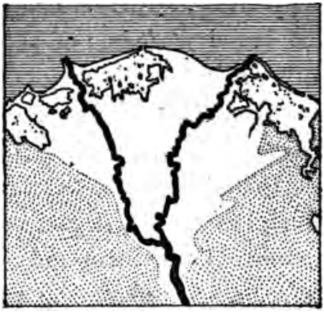
'Oh, I see; there is some more "broken" water in the middle of the sea. There can't be a river here; what makes all that foam and noise?'

3. 'Sharp rocks just below the water, master. If you had been to sea as often as I have, you would know too well what a sailor means when he shouts "Breakers ahead!" He means that there are rocks in the way of the ship; and, if she is not turned aside before she reaches them, she will be broken to pieces or sunk.' 'Now we are clear of them. Take the glass, Green, and look ahead. What can you see?'

4. 'I see hills a good way off, and I can just trace the course of a river, and we ought to be *going straight* towards its mouth; but it does not

seem to come into the sea at all. Oh, yes, it does; but it takes an odd sort of turn to the right, and there is another bit of it turns to the left, and a great piece of low land between them.'

5. 'Ah! this is like the Man from the Moon's friend with the many mouths. A great many rivers split up in this way into two parts or more, sometimes six or seven. The piece of land between them is called a **Delta**, because the Greeks—a famous old nation—called their letter D by the name *Delta*, and this piece of land is shaped like it. Here is a little drawing of a Delta. And here is the letter Δ. You see they have each three sides. The most famous *Delta* is that of the Nile, in Egypt, which once had seven mouths. One of the largest Deltas is that of the Danube in Turkey.'



[THE DELTA OF THE NILE.]

6. 'What makes these Deltas?' asks Green.

'They are formed by the sand and earth brought down by rivers. The tide stops it as it comes near the sea, and sometimes it settles right across the mouth, and forms what is called a **Bar.** We came over one just now, as we came out of the harbour; but the tide was so high that we did not see it or feel it. Sometimes the mud falls to the bottom before reaching the sea; and the water, trying to force its way, runs on each side of it, and so splits into two streams, leaving the *Delta* of sand or earth in the middle.'

XXXI. THE STORM.

1. 'BOATMAN! boatman! what are you about? Why don't you go straight on? I want to see everything on shore, and you are taking me away from it.'

'Gently, master, gently; look ahead, and see what you can see.'

'Why, there is another *Promontory* sticking out ever so far!'

2. 'Yes, Johnny, don't you think the boatman was right in not steering the boat against it? We must go round it; and there, beyond it, are other

points or **Headlands.** So we cannot row along close to the shore just now.

3. 'There are many names for these points. One is a **Cape** or **Head**; one a **Bill**; one a **Naze** or **Ness**; and in Scotland there is a funnier word, **Mull.** I leave you to find out the meaning of *Head*, *Bill*, and *Naze.* You know what the Man from the Moon said when he came to one of them. That may tell you the meaning of *Naze*, and the others you may easily guess.'

4. 'That's all very well,' says Johnny; 'I'll think about them another time. But what makes the boat begin to dance about in this way? And what makes the waves——'

Johnny's sentence was never finished. For just then a gust of wind nearly blew off his cap, and a wave beat over the boat, and came right into his mouth! When he could speak he began again: 'What nasty stuff! What does it all mean?'

5. 'It means, master, that a storm is coming. Do you see those heavy black clouds over there to the westward? If we don't get to some shelter in ten minutes, you'll know more of the taste of salt water than you'll like.'

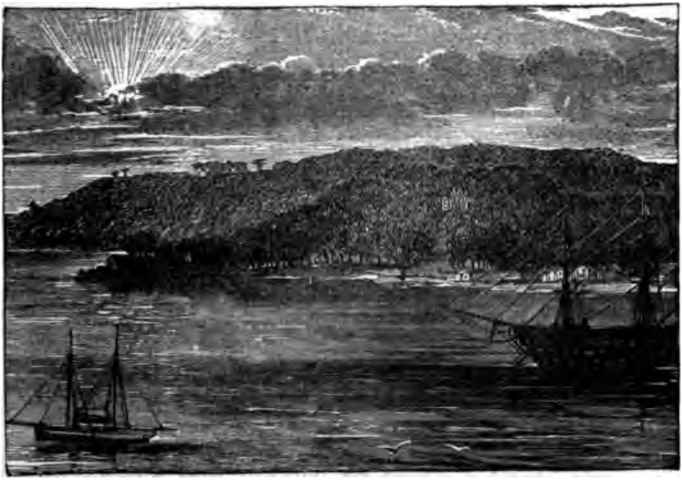
'Where can we find any shelter, boatman?

6. 'Well, there's Shingle Bay round that point of land; on the east side of it, as long as the wind

is in the west, we may lie as still as this young gentleman would in his bed.'

'Stiller, I hope,' says Johnny; 'for I'm always tossing and tumbling like the waves, when I'm asleep.'

7. 'To Shingle Bay, then, let us go. Here, certainly, it is quite calm, though the wind is blowing hard, and the waves are foaming up against the point. A bay like this, forming a shelter for ships, is called a **Haven** or **Roadstead**; when there is a seaport close to it, you know its name—a **Harbour**.'



[A HAVEN.]

XXXII. THE HAVEN.

1. 'BUT suppose,' says Green, 'the wind were to change and blow from the east; how should we do then?'

'If I were in this boat, master, I should draw her up on the beach; but, if we were in a large ship, there would be nothing for it but to get out of the bay as fast as we could, and trust to the open sea. If we stayed here with an east wind, we should be driven on shore and wrecked.'

2. 'And could nothing be done to make it safe whichever way the wind blew?'

'Yes; you might build a great wall right across the mouth of the bay, leaving a channel on each side. If ever you go to the great seaport of *Plymouth* you will see a wall of this kind, and you will hear its name—the **Breakwater**—because it *breaks* the force of the water.'

3. 'Now, I remember,' says Green, 'the Man from the Moon came into a bit of still water; but he had no breakwater to shelter him, but a bank of sand.'

4. 'Yes; I think he had got into a roadstead called *the Downs*, on the south-east of England; and outside were the Goodwins—a **Quicksand** on

which more ships have been lost than on any spot on the English coast.'

5. 'Johnny,' says Charlie, as we are waiting in the bay, 'how did you like the taste of the sea-water?'

'Nasty!' says Johnny, making a wry face. 'Do sailors drink it when they are at sea?'

6. 'Nay, master, they would soon go mad if they did! All the water in the sea is salt, and not fit to drink. You must always take plenty of fresh water with you in a ship, and fill your tanks whenever you stop at any seaport. Else you may find, as shipwrecked sailors have often found—

> Water, water everywhere,
> But not a drop to drink.'

7. 'And where is the *fresh* water?'

'In our brook, in the spring, in the river, in the lake; all that we saw till we reached the sea was fresh; and so is the water everywhere, in springs, and brooks, and rivers. *Some* lakes are salt; I may tell you the name of one, the largest of them all—a great sheet of water in Asia, which is so large that it is always called the Caspian *Sea*.'

XXXIII. THE STRAIT AND THE ISLAND.

1. AT last the storm is over, and we can go on our way. 'Boatman, boatman!' again shouts Johnny, 'you are going to do just what you wouldn't do before—you are sending the boat straight against that great rock.'

2. 'Wait a little, and you will see, master.'

'Take the glass, Johnny, and look.'

'I declare there is a little crack in the rocks, a tiny opening; but the boat will never go through that! Yes, it does! there is just room for it; the oars almost touch the shore on each side; but there is plenty of water, and we creep safely through to the other side. What a funny little passage! I thought every moment we should stick fast.'

3. 'That narrow passage is what we call a **Strait**; you remember the Man from the Moon came through one, as he was looking up at the great rock or *Promontory*. That, I think, was the *Strait of Gibraltar*. On our own coast we have the Strait of *Dover* between England and France, the *Menai* Strait between the island of Anglesea and the rest of Wales, and some others.

4. 'If the passage is a little wider, we call it a

Channel. If you look carefully over the journey of the Man from the Moon, I think you will find that he passed through the English Channel, between England and France. A very narrow strait is sometimes called a **Sound**, which means a piece of water which a man might *swim* over.'

[A LIGHTHOUSE.]

5. 'What a funny church-tower that is, on that *point of land* to our left!' cries Charlie; 'but

I don't see any church, and I don't know what they could do with it there, unless some one came to preach to the fishes! For there are no houses, and no people.'

6. 'It is not a church-tower, Charlie, but a **Lighthouse.** At the top of the tower is a large lantern, and in the lantern a bright light is kept burning all night, to let sailors know where they are. Let us go and look at it. You see the lantern has glass on all sides, some panes red, some green, and some white; and the light turns round, so that whichever way a ship is coming, the sailors can see the light and know by the colours what lighthouse it is. Take the glass, Charlie, now we are round on this side, and have a good look at it.'

7. 'The glass! where is it? I declare I have left it behind. I took it from Johnny and put it down on a rock for a moment at the mouth of the strait, and I must have forgotten to take it up again. Shall we go back and look for it?'

8. 'We may find it without going back, master,' says the boatman with a grin; 'is this anything like the rock you left it on?'

'Why, yes; and here it is. But how did we get here?'

9. 'We have sailed right round this piece of land while you were busy watching the lighthouse, and have come back to the mouth of the strait. Pieces

of land like this, which have water on every side, are called **Islands**. We live, you know, on an island called *Great Britain*; close to us is another island, called *Ireland*, and a great many small ones. On the other side of the world, Charlie, are the islands of *New Zealand*, where your brother lives, and a much larger one, *Australia*, where many English people have settled. The ocean is full of islands.'

10. 'Are they floating in the water, like a cork in a basin?'

'No! Charlie, if all the water could be pumped or drained out of the sea, you would find that far down are valleys and plains like those on the land, and that these islands are the tops of hills and mountains, just high enough to peep above the water.'

XXXIV. THE PENINSULA AND THE ISTHMUS.

1. 'NOW let us pass through the strait once more, and go straight across the next bay, round one more headland, and then our little trip will come to an end.

'No, no, boatman, not *round* the point. I see another strait; pray take us through it. I like to watch the boat winding its way among the rocks.'

2. 'Well, master, we can but try; but I think you'll have to go my way at last.'

'But here is the opening, just like the other strait, and I see the way through, and the open water on the other side. Yes; there is the way in, and there is open water on the other side; but—— Hallo! what's this? Some one has been here, and put a mound of sand and stones across the strait and we can't get by.'

3. 'Ah! Johnny, Johnny, you are like the Man from the Moon when he found a little "scrap" of land, as he called it, stopping him. But his "scrap" and your "mound" were not put there by man's hands; they have been there for hundreds of years. Indeed, most likely it is the sea that has scooped out this channel between the headland and the rest of the land. Once, I dare say, they were joined to each other; but, bit by bit, it has washed away the soil and rocks by always beating against them, and has left nothing but Johnny's "mound."'

'Then I wish it had finished its work,' says Johnny. 'I won't go back; I'll stay here till you row round.'

4. So we turn the boat, and leave Johnny alone. As we go, Green asks, 'What are the right names for Johnny's "mound," and for the little bit of water, that he took for a strait?'

'The little bit of water is a **Creek**, the mound is called a **Neck** of land, or (if you want a bigger word) an **Isthmus**, which means exactly the same, a Neck.'

'Then my neck is an isthmus,' says Charlie.

'Yes, if you like to call it so; for, just as it joins your head to your body, so the Isthmus joins the two pieces of land to each other.'

5. 'And what shall we call this smaller piece?'

'If there were no isthmus, it would be an island; so it is not quite, but *almost* an island.'

'Then I'll call it *Almost-island*,' says Charlie.

'But *Almost-island* would be rather an ugly name. So, to make it sound better, we take two, or one long word made up of two, from the language of the old Romans, and call it **Peninsula**, which means the same. So *Isthmus* and *Peninsula* are two fine-sounding words for what would be in plain English, *Neck* and *Almost-island*.'

XXXV. CANALS.

1. YOU will find one or two peninsulas in the map of England, and a great number on the west coast of Scotland. Look for *Cornwall*, *Carnarvonshire*, and *Cantire*. And then, if you like, look in the map of the World; and you will see that one of the largest masses of land, *Africa*, is a great

peninsula, joined to *Asia* by the little Isthmus of Suez. And, on the other side of the Ocean, the two parts of *America* are joined to each other by the *Isthmus of Panama.*

2. 'But here we are on the other side of our own little isthmus. What can Johnny be about? He seems very busy. He has found a spade somewhere, and is digging a trench to let the water through!'

'Yes! if you'll only wait long enough, the next boat that comes will find a way open, and won't have to go that long way round for the sake of this stupid little——'

'*Isthmus!*' says Charlie, laughing; 'while you've been digging, you've lost a lesson, and we've learnt two new words.'

3. 'Never mind, Johnny. Digging is often as useful as learning; and you've been trying, in a small way, the same thing that a famous man has been working at all his life—making passages through isthmuses, to save ships long voyages round peninsulas. Your trench, if it were ever finished, would be like a little model of a **Canal**, which is a water-passage cut through the land. We shall see one as we go home.

4. 'Across the Isthmus of Suez, which I just told you about, this clever man has had a canal cut, to let ships pass from one sea to the other, instead

of going all round Africa. You can see in the map how much time this must save in going to India or Australia.

5. 'And now he wants to do the same for the Isthmus of Panama, to join the two great oceans to each other. So, Johnny, you may call your isthmus *Little Panama*—you can't call it *Suez*, for your canal is not open yet! But you mean to have it open some day; and that is all that the great man can say of *his* canal through the real Panama!'

XXXVI. THE OCEAN.

1. OUR trip is finished, for we cannot take our little boat far out to sea; though Johnny very much wants to have a sail 'to Ireland, or Mesopotamia, or Timbuctoo, or anywhere'—choosing the longest names he can think of, and not caring that the last of these places is far away from the sea! But we must say something, as we go home by railway-train, about this great Ocean, of which we have seen some little bits.

2. The word **Ocean**, which I have used once or twice, is the name given to the great body of salt water which covers so much of the face of the Earth. Wherever you are on the land—even at Timbuctoo, Johnny—if you only go far enough in *any direction*, North, South, East, or West, you

will come to salt water at last. This shows us that the Ocean lies all round the land; and that even the largest pieces of land are really islands. Look at the globe at school: you see that there is water at the North Pole, at the South Pole, and stretching right round the Earth from East to West, and from North to South.

3. 'I thought there were *five* Oceans,' says Green, 'the Atlantic, the Pacific, the Indian, the Arctic, and the Antarctic.'

'Yes; we give each part of the great Ocean a name of its own, and speak of it as if it were an Ocean by itself.

4. 'Just as we might say to-day that we have sailed over three or four bays: one where we took shelter, one on the other side of the lighthouse, one between the lighthouse and the creek, and one between the isthmus and our landing-place. We might give a name to each of them.

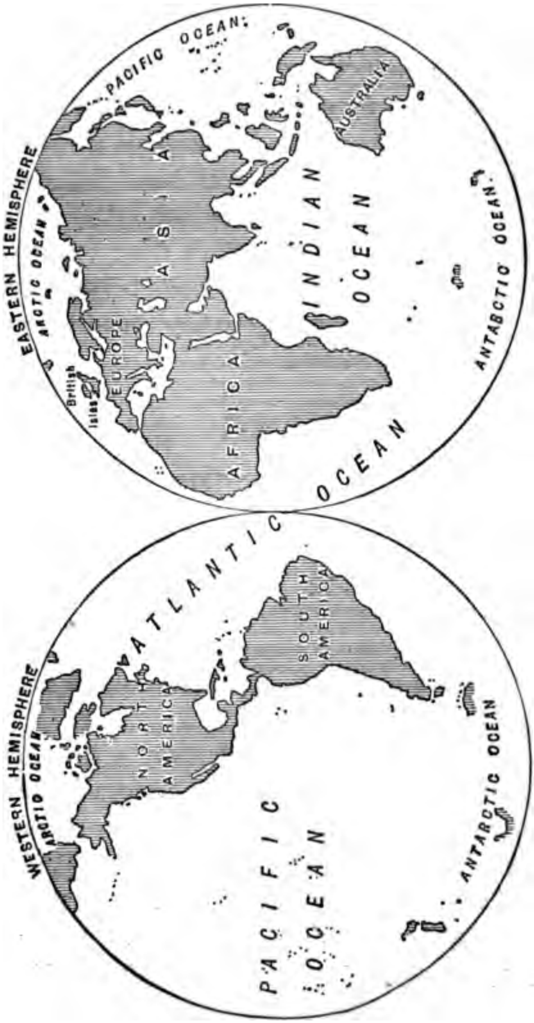
5. 'We called the first *Shingle Bay*, because of the *shingle* or small stones on the beach: what shall we call the second?'

'*Forgetful Bay* or *Careless Bay*,' says Charlie, 'because I forgot the field-glass.'

'And the third?'

'*Johnny's Bay*, to keep us in mind of his creek and his canal.'

'And the last?'



[THE GREAT OCEANS AND CONTINENTS.]

'*Weary Bay*,' says Johnny, 'for I'm very tired!'

6. Very well, then, we have the four names. But, if we went far enough out to see the mouth of each bay, we should find that they all met, and were only parts of one great sea. So, what we call the five Oceans are really one; they all touch each other, and a ship passes from one to the other without finding any land between them, just as we rowed from bay to bay round the points and through the straits.

XXXVII. THE CONTINENTS.

1. THE Ocean, as I have shown you, flows all round the land; and, if the land were all joined together, like the water, it would be one great island. But you can see on the globe that it is cut up into a great many parts, with water between them.

2. 'You can see that there are a great many smaller parts; and these, as I have already told you, we call *Islands*. Here are one or two on the coast of England—the *Isle of Wight* on the south, and the *Isle of Man* on the west. But there are some larger ones with another name. How many *large* parts do you think there are, Charlie?'

3. 'I don't know without a map or a globe; but I think the book says *Five.*'

'Well, let us look. Here is a pocket map. First, trace with your finger the line of the east side of the Atlantic: begin here, at the north of Norway, follow it on round the Baltic Sea, and so out again, and along the west and south coasts of Europe, the north, west, and east of Africa, the south and east of Asia, and so through Behring's Straits into the Arctic Ocean, and along the north of Asia and Europe to Norway again. All this, you see, is without a break; it is one great mass of land. Then cross the Atlantic: you can see at once that North and South America are another great mass, lying between the Atlantic, the Pacific, and the Arctic Oceans.'

4. 'Well, then,' says Charlie, 'there are only *two* great masses of land; what are their names?'

'They are called the **Old World** and the **New World**; because the first was for a long time the only part of the world of which anything was known; the second was found out, about 300 years ago, by a great sailor called *Columbus.*

5. 'Besides these, there is *one* island so large that it is often counted as one of the great masses. Can you tell what that one is? It is almost exactly on the other side of the world.'

'New Zealand?'

'No; not New Zealand, but close to it.'

'Oh! Australia.'

'Yes; so that, properly, there are *three.*'

6. But the first is made up of three parts, *Europe, Asia,* and *Africa.* Africa, as we said before, is only joined to Asia by a narrow band, the Isthmus of Suez; and Europe and Asia, though they lie close to each other on one side, have seas between them all along the south of Europe. When the people of Asia first came over to Europe, they had to cross these seas; and so, no doubt, they thought that they had reached quite a new part of the world, and called it by a new name.

7. So we come at last to your first number, Charlie—*Five.* These are **Europe, Asia, Africa, America, Australia.** To these we give the name of *Continent.* This meant, I suppose, at first a large piece of land *containing* many countries. But you need not think much about this. Australia is a continent, though it is all one country; and so would Europe be, if all its countries became one. A **Continent** now means a *large tract of land.*

XXXVIII. ILLUSTRATIONS.

1. AND now, to finish with, let us mention a few more names, to keep us in mind of the pieces of Land and Water that we have seen.

2. *Lakes* are nearly all in the north-west, among the Cumbrian Group. Besides Windermere, there are *Derwentwater*, *Ulleswater*, and more than a dozen others; some high up, like *Haweswater*, or *Buttermere*, but most of them nestling in the hollow between the hills.

3. The largest inland *Towns*, next to London, are *Manchester* and *Birmingham*; the largest *Seaports* are *Liverpool*, *Hull*, *Newcastle*, and *Bristol*—two on the West coast, two on the East.

4. The finest Harbour is *Milford Haven*, in Wales; next to that, perhaps, *Plymouth* and *Portsmouth*, on the South coast. Next to the Downs, *Yarmouth Roads*, on the East, is the best example of a *Roadstead*.

5. *Cliffs* are found everywhere on the coast; the most famous are the white chalk cliffs of Dover. *Land's End* and the *Lizard Point* in Cornwall, and *Flamborough Head* in Yorkshire, are perhaps our most striking *Promontories*. Close to Flamborough is *Spurn Head*, one of the flattest of flat Capes; and between them is Bridlington

Bay on the East coast answering to *Cardigan Bay* on the West.

6. The *Solent* on the South of England, and the *Menai* on the North-west of Wales, are *Straits*, separating the *Islands* of *Wight* and *Anglesea* from the mainland.

7. We have no real *Isthmus* in England, and no part of the country touches the open part of the nearest *Ocean*, the Atlantic. We have *Seas* on every side—the *Irish Sea* on the West, the *North Sea* on the East, the *English Channel* on the South.

[ROSS ISLAND, KERRY, IRELAND.]

SECTION II.

I. CHARLIE'S NEWS.

1. 'NEWS! NEWS! glorious news!' shouted Charlie, as he ran breathless up the steep ascent from the valley, to the ridge on which we were waiting for him.

'Why, Charlie, wherever have you been? You are always first, and we couldn't think what had become of you.'

2. 'I've been reading a letter,' said Charlie, 'and the first reading fairly took away my breath; the second made me shout and dance about the room; so I had to read it very slowly a third time, before I could quite take in the meaning of it. It's from my uncle in Liverpool—he has been to New Zealand and has seen Jack; and he promised him, next time his ship sailed that way, to take me with him, and show me, so he says, the whole world, and all that's in it! He means to sail in a fortnight, and my father says I may go. Isn't it jolly?'

3. 'Oh! Charlie,' says Johnny, rather sadly, 'I wish I were you! Why, when you come back, you'll be able to tell us all about all the wonderful things we read of in books, and the meaning of all the hard words. Do you think you'll see the *Equator?*'

4. 'No! Johnny, no one ever saw the Equator! But he will be able to tell us a good deal about it, and about most of the other hard words. He will be quite sure that the earth is round; he will understand much more than he does now about the ways in which it moves; he will have found out, if he keeps his eyes and ears open, what is the use of the lines of *Latitude* and *Longitude*; he will have seen *Continents* and *Oceans* that we have only talked about. Oh! Charlie, Charlie! You will be very wise, before you come back! But we must try what we can do at home. You must send us letters very often, and we will study it all on the map; so that perhaps Johnny will surprise you by knowing more about your voyage than you do yourself!'

II. THE GLOBE.

1. 'Well! boys, this is Charlie's last day. I have brought you all here, to my own room, because I have a good large globe, which may help us to see how he will get round the world!'

2. 'Get round!' cries Johnny, 'how can he manage that? Why, when we took *our* sail, we went on, and on, and on, round promontories, and through straits; but, the longer we went on,

the farther we got from home; we never came round again, till we turned back and took the train.'

3. 'Very true, Johnny. But if we had gone on long enough, and our little boat had not sunk, we *should* have come round Only I am afraid you would have thought the time very long. You would have been like the sailors of Columbus, the great man who found out America. He told them they MUST come to land if they went on, and on, and on, as you say. They did not believe him, and kept on grumbling, and complaining that they would never get back, but would be carried on westward for ever, or till they perished from hunger. However, we have no time to lose. Let us look at the globe to-day, and we will settle Johnny's doubts some other time!'

'Well, but,' persists Johnny, 'you told us the other day, that a map was a plan of the earth, and a map is flat.'

4. 'True, Johnny; for a small piece of the earth, the flat map will do very well; because in a very little piece we cannot see the roundness; and, even for larger pieces, a map shows the distances between places, and the *direction* of one from the other. But look at a map of the world. Suppose you sail on and on to the westward: you come at last to what is marked on the edge of your map. Where

do you go next? Do you find a wall to stop you? Or do you go *over* the edge, and tumble down into darkness?'

'I hope not; for that would be a bad look-out for Charlie!'

5. 'Come, then, and look at the globe, and we shall see what will really happen to him. This is the shape of the earth; and you can see for yourselves that, if he goes on, and on, and on, he will come back again in time to the place he started from. Trace it with your finger. See! Starting from England, we cross the Atlantic Ocean, then from the east coast of America to the west——'

'Ah! but you can't take your ship over the land!'

6. 'No! Johnny, you remember your isthmus. We can't go round the world in a direct line from England, and keep to the sea all the way. We *must* cross a great deal of land. But let us finish this journey first, and some day I will show you where this may be done.

7. 'When we come to the west side of America, we find the Pacific Ocean. Crossing it, we are in Asia; and after a long cold journey over Asia and Europe, we find ourselves in Holland, with nothing between us and England, except the narrow piece of water called the German Ocean. So, you see,

we have gone *on*, *and on*, for 25,000 miles, and have come back to our starting-point without turning.'

'Yes, with your finger! *I* shan't believe it till Charlie has really gone round in a ship, and can tell me all about it.'

[THE EARTH.]

8. 'Very well! We shall all be glad to hear what he can tell us; and then, perhaps, you will believe that the Man in the Moon's friend was right when he called the earth "a neat little ball!"'

9. 'I don't think,' says Green, 'that it is exactly

a ball. My book says that it is flattened a little at the top and bottom, which is not like a ball.'

'No! indeed,' says Johnny, 'if anybody gave me a ball with a flat top and bottom, I should throw it into the nearest ditch.'

10. 'Well, then, if it is not like a ball, what is it like? Is there anything you know of, which has such a shape?'

'*An orange! An orange!*'

'Yes! an orange is shaped more like the earth than anything else we know; and, as you all know something about oranges, they may help you to remember the shape of the earth.'

'Then it's all right,' says Johnny. 'I thought it was as flat as a pancake. But I like oranges better than pancakes; so I don't care!'

III. THE SHIP.

(i.)

1. 'Good-bye, Charlie! a pleasant voyage to you; and be sure you write to us very often. We shall get a Map of the World; and then, as your letters come, we will mark your track with a red line, and you shall see it when you come back.'

'How will he manage to send his letters?'

says Johnny, as he watches the boat taking Charlie to the ship. 'Are there any post-offices in the sea?'

2. 'We will talk about that when the first letter comes. For to-day, what we have to do is to get a good view of his ship as it sails away, and to see it as long as we can. I am glad that his uncle had to come to Plymouth, instead of starting from Liverpool; because here is the *breakwater*, which we heard about when we were at Shingle Bay; and we could not have a better place for our last look. Let us take a boat to the breakwater, and stand there to watch the ship till it is quite out of sight.'

3. 'There it goes!' cries Johnny, 'and there is Charlie, waving his handkerchief to us. But what is the use of that ugly little thing with the red chimney, and the black smoke coming out of it? *I* should not like, if I were that nice pretty ship, to have a little fright like that before me, all the way to New Zealand.'

4. 'That's the *tug-steamer*, master,' says the boatman; 'and it's very useful in its way, though it's not a beauty.'

'What *is* the use of it, boatman? Surely the ship could find its own way out, if it can go safely to the other side of the world! It looks like a great baby, with an ugly little nurse.'

'Perhaps she might get out, master, in time; but she would be longer over it, and with this wind blowing, she might get wrong.'

5. 'Look, Johnny, look!' cries Green; 'the nurse is leaving the baby! and they are putting up the sails to catch the wind. Now she goes along grandly.'

'Yes,' says Johnny; 'I like that much better: that baby can run by itself, and I'm sure it likes it.'

6. 'You should say, *she* likes it. Sailors always call their ship *she*—I don't know why.'

'Well, then, *she* likes it. See how she tosses her head, and cuts through the waves, and splashes them about: I'm *sure* she likes it, and is saying to herself, how glad I am to have got rid of the ugly *tug*!'

7. 'Why, Johnny, you are a poet, without knowing it! That is just what *another* poet thought, when he wrote the line

> She walks the water, like a thing of life.

(ii.)

8. 'Now, let us watch her. Can you see Charlie?'

'Hardly. He looks like a speck; but I can make out the white handkerchief. Now it's gone; and the ship herself looks smaller and smaller every minute.'

'Take the glass, Green, and tell us what you see.'

'The sails are still bright and shining in the sunshine. But the body of the ship'——

'Say the *hull*—that is the proper name.'

'Well, then, the *hull* is very dim; now it is out of sight altogether, and the sails seem to be flying through the air, like birds, by themselves.'

9. 'You must be wrong, Green,' cries Johnny,

'how can part of the ship be out of sight before the rest?'

'Look for yourself—what can you see?'

'It's very odd! I do see the sails, and bits of the tall poles they hang on; but the great hull is not there! I think the sails must have blown off, and the hull must be somewhere else! No! I've looked all round, and I can't find it. I don't know what to make of it.'

10. '*Listen*, then, and Charlie's ship will teach us a lesson, before we leave the breakwater. I don't wonder that you are surprised; for you are quite right in thinking that the great hull ought to be seen at least as far off as the light sails, or the slender poles, or *masts* as they are properly called, unless there was something to hide it. But think of your last lesson on the Globe, and see if you cannot find out what it is that hides the hull from you.'

11. 'I begin to understand,' says Green. 'If the surface of the earth were flat, we should see the hull longest, because it is largest.'

'Yes! and we should see the whole of the ship a great deal longer than we do now. If, instead of being on this breakwater, nearly on the level of the sea, we were standing on a high hill, like our old friend the ridge, we should see a great deal farther than we do now. Ah! there comes just what I wanted to help me to explain this.'

12. 'What comes?' cries Johnny; 'it is getting dark, and I can't see anything.'

'Look again, and take the glass, if you like. There is something which you can see all the better, *because* it is getting dark.'

'Ah! a light some way above the waters; and now I see what looks like a tower, standing straight up out of the sea.'

13. ‘A lighthouse!’ cries Green, ‘like the one we saw with Charlie at *Careless Bay*.’

‘Yes!’ the famous *Eddystone*, which we spoke of then. Now, why do you think it was built so high?’

‘That it may be seen farther off, I suppose.’

‘Oh! but you can’t see it very far off,’ says Johnny, ‘though you put it ever so high.’

14. ‘True, Johnny, you can’t see it very far over sea or over land. But I think you *can* see a light at a very great distance indeed. Can’t you find out what it is? Look up! What do you see?’

‘Oh! the moon! I wonder whether our old friend has got home yet, and whether he is watching us with a telescope!’

15. ‘Well! you see the moon, which is thousands of miles off; and an hour or two ago, when Charlie sailed, you could see the sun, which is much farther; and in a clear night, like this, you can see the stars, most of which are farther still. Why is it, do you think, that we can see so far through the air, and so short a distance on the surface of the earth? Of course you could not see the Eddystone light so very far, because it is but a small and feeble light, compared to sun, moon, or stars. But you might expect to see it much farther off than you do.’

'There must be something in the way,' says Johnny. 'Just as I found last winter, when I knew Dick Dawson was waiting with a snowball to pelt me. He hid behind a waggon, and I did not see him till I came close up to him.'

16. 'Dick had the best of that game, Johnny! But what was it that was in the way, like his waggon, when first the hull of Charlie's ship went out of sight, and soon after the masts and sails disappeared also?'

'I think,' says Green, 'it must be because the earth is round; and, as the ship gets farther off, the earth itself comes between it and our eyes. And that is why it seemed to be dipping lower and lower down, as it went on.'

17. 'Yes! but why did you lose sight of the hull first?'

'Oh! of course—because it is lower, and the earth would be between it and our eyes, while the tops of the masts would still be high enough to be seen.'

'I don't understand,' says Johnny.

'I will try to make it plainer, when we get home, and can look at our globe. But now it is time to go, and our boatman will be tired of waiting.'

'Good-bye, Charlie. Waves! be sure you take [illegible] *message* to him.'

IV. THE SPHERE.

(i.)

1. 'JOHNNY, you're late.'

'Yes; I forgot my football, and I had to run home for it, that I might go and have a game with Dick Dawson, after the lesson is over.'

'Then I must forgive you; for your football is the very thing I wanted.'

'A football to teach geography?'

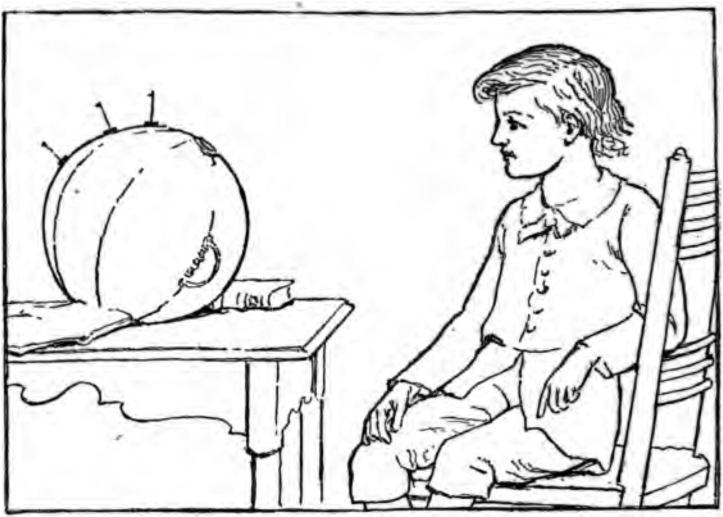
'Yes; a football. So let me have it. If I spoil it, I will give you a new one.

2. 'Watch what I am doing. First, I glue to it three pieces of cork, the second a little to the left of the first and a few inches behind it, and the third in the same way behind the second and to the left of it. Next, I stick a darning-needle into each piece of cork. You see that they are quite upright. Now, then, Johnny, come and place the football on this stand, so that the first cork is on the highest point of the ball. Fix the stand, so that this cork is exactly level with your eye. Go back a step or two, and look at the ball. Can you see the first needle?'

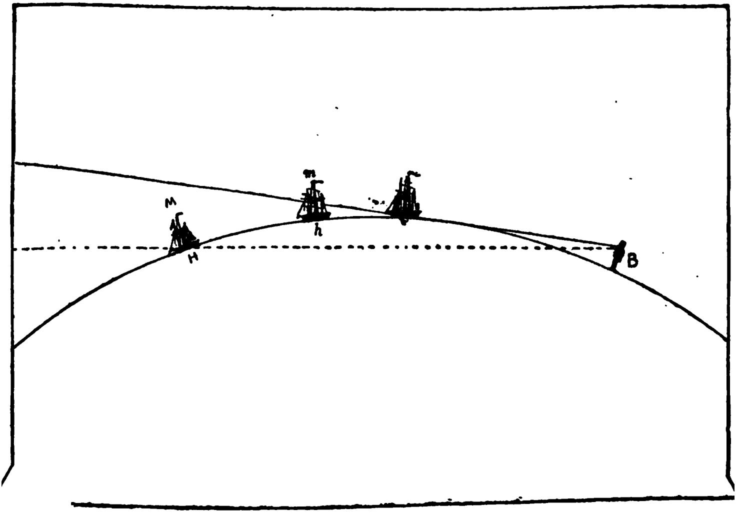
'Yes! the whole of it, cork and all.'

'And the second?'

'I can see the needle, but not the cork.'



[JOHNNY AND THE FOOTBALL.]



[ROTUNDITY OF THE EARTH.]

'And the third?'

'Is quite out of sight.'

3. 'Now, then, Johnny, suppose that fly that has settled on your shoulder could speak, and were to say to you, "*I'm sure that world is flat*" (for the ball would seem a world to a fly), what should you say to it?'

'I should say, "*You silly, conceited little creature! what can you know about it? If it were flat, I should see all those needles as plainly as I see the first; but one of them is quite hidden, and another is half hidden, by the round piece of the ball which comes in the way. Perhaps you can't see far enough to find this out; but little folk like you must believe what they are told.*"'

4. 'Very good, Johnny; you are not very civil to the poor fly! I won't be quite as hard on you; but that is very nearly what I should say, if you still doubted whether the world is round. You saw at Plymouth exactly the same sight you have been showing here to the fly. Only, instead of three needles, you had one ship moving from place to place. When it left the harbour, and for a little while after, it was like the first needle; you could see the whole of it. When the hull was out of sight, it was like the second; and, when you lost sight of it altogether, it was like the third: it was not really too far off for you to see with the glass;

but it was hidden by the round portion of the earth which lay between you and it.

(ii.)

5. 'Look at the globe. Here is Plymouth. Trace a line towards the south-west, the way that Charlie's ship went; you can see, even on a little bit of it, that it is not a straight line, but what is called *curved*; that is, not like a ruler or an arrow, but like the edge of a hoop. Suppose we put on this spot the letter B for breakwater, and here H M for hull and masts.[1] Now try to draw a *straight* line from B to H M; it must go *inside* the globe; and, as we can only see in straight lines, and we cannot see through solid earth, or see far through water, it is plain that we cannot see H M at all. A little nearer, at *h m*, we can see *m* but not *h*, because a straight line from B to *m* lies above the surface of the water.'

'Then,' says Green, 'if water were as *transparent* as glass, should we not be able to see all parts of the ship, however far it had got?'

6. 'If land and water were *perfectly* transparent, you could at least see it much longer than we did the day before yesterday. Even then, you would find it would not be quite so easy as you fancy. But the thought is a good one to help you to keep

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[1] See diagram on p. 122.

clearly in your mind the lesson you learnt from the ship. You can *suppose*, first, that you can see through land and water; and then you can fancy you follow the ship as far as you please. All of a sudden, just when it is at the point *h m*, land and water become *opaque*, as they are now. You lose sight of the hull, and see the masts only; or, if the change comes when it is at H M or farther on, you lose sight of the whole ship! If the earth were flat, it would make no difference whether the land and water were opaque or transparent; for there would be nothing to come between you and any object you wanted to see.

7. 'Now, Johnny, is it all clear both to you and to the fly?'

'I don't know. Perhaps, at some other place, it wouldn't be the same as at Plymouth.'

'Johnny, Johnny, remember what you said to the fly. Little folk like you must believe what they are told. Go where you will, it is always the same. Charlie will tell you so when he comes home. Everywhere the hull sinks first out of your sight, and then the masts. So we are sure that everywhere the surface of the earth is round, not flat. Before Charlie's letters come to an end I daresay he will have something to tell you which will make you quite certain.

8. 'One big word to finish with. What name

shall we give to this round earth? The Man in the Moon's visitor called it a ball; is there any better name?'

'Globe?'

'Good: but not the best! The proper name for such a ball is **Sphere**; that is, supposing it were perfectly round every way. As it is not *quite* round, it is properly an **Oblate Spheroid.**'

'Oh! what hard words,' says Johnny; 'I sha'n't try to remember them. Now I'm off to have a game of *Sphere* with Dick.'

V. THE ECLIPSE OF THE MOON.

(i.)

1. 'JOHNNY! Johnny!' shouts Green, as they meet at the corner of the lane; 'I've a letter from Charlie: he sends a message to you.

'Here it is:—

'Tell Johnny that he *must* believe the world is round. For the Man in the Moon himself has been giving me a lesson about it!

'Oh! what a glorious sight it was! A few days ago, my uncle said to me, "Charlie, did you ever see an eclipse of the moon?" Of course I said No.

"Well, then," he said, "stay up to-night till 11 o'clock, and you'll see one."

2. 'I waited and watched. There was a full moon shining brightly. But, a little before 11, there came a shadow across one edge of it, and it crept on and on, and you saw the poor moon getting darker and darker, as if the shadow were putting out her light, or as if she were hiding herself behind a thick curtain or screen. At last her whole face was hidden; but, in a few minutes, she began to peep out on the other side, and the shadow passed slowly away, till we saw the full round face of the moon again.

3. 'As soon as it was over, I asked Tom what was the meaning of it.

'"Why," said he, "don't you know? That was the shadow of the earth. The earth has been passing between the sun and the moon; and, as the moon has no light of her own, of course she grew dark, when the light of the sun could not reach her."

4. 'Now listen, Johnny! "*The shadow of the earth was round!* Just the sort of shadow that your foot-ball would throw if you held it in the sun. I think you may be quite sure that there is no mistake about it, and that the earth is really a sphere."'

'What a fine sight!' exclaimed all the boys. 'Could we not have seen it at home?'

'Not this one, I think; and it is not very often that it can be seen so well. But *eclipses* of the moon, as they are called, can often be seen in England.

(ii.)

5. 'Well, Johnny, are you satisfied? Is the earth round, like a ball or an orange?'

'I'm not sure yet. For look here! If I hold this penny in the sun, it makes a round shadow. So, perhaps, the earth is like my *circle* after all, and not like a sphere!'

6. 'True, Johnny, when you hold the penny facing the sun, its shadow is round. But it would not always be round.

'Let us take some larger object, and you will see it better. Here is a thick, square book. I hold it with its flat side towards the sun; what is the shape of its shadow?'

'Square, like the book.'

7. 'Now I turn it till it faces the sun, edgeways; how does the shadow look now?'

'Oblong—long and narrow.'

'Now I take a dinner-plate, the edge of which is a circle, like that of Johnny's penny.'

'The shadow is round!' cries Johnny.

'Yes! but see, as I turn it, what becomes of the round shadow?'

'It is gone—all but a thin straight line!'

8. 'Now try the foot-ball. Hold it yourself, Johnny. Turn it any way you like, it is all the same. What is the shape of the shadow?'

'Round all the time!'

'Then it is plain that flat round bodies throw a round shadow only when the light falls straight on their faces; but the shadow of a sphere is round always. If you were to see a hundred eclipses of the moon, the earth would be catching the sun's light in many different ways; but, whatever way it falls, *the shadow on the moon's face is always round.* So the earth cannot be square, or oblong, or round like a circle; it *must* be a *sphere.*'

9. 'I suppose it must be! I wonder if Charlie saw the man in the moon!'

'No! Johnny, so far as we know, there is no man there: that was only our fancy. But the moon and the sun and the stars, though they have no voices to speak with, can teach us lessons about the wonderful order of the works of God:—

> 'For ever singing, as they shine,
> The Hand that made us is divine.'

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